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# MODULAR

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The Detroit icons talk synths and performance

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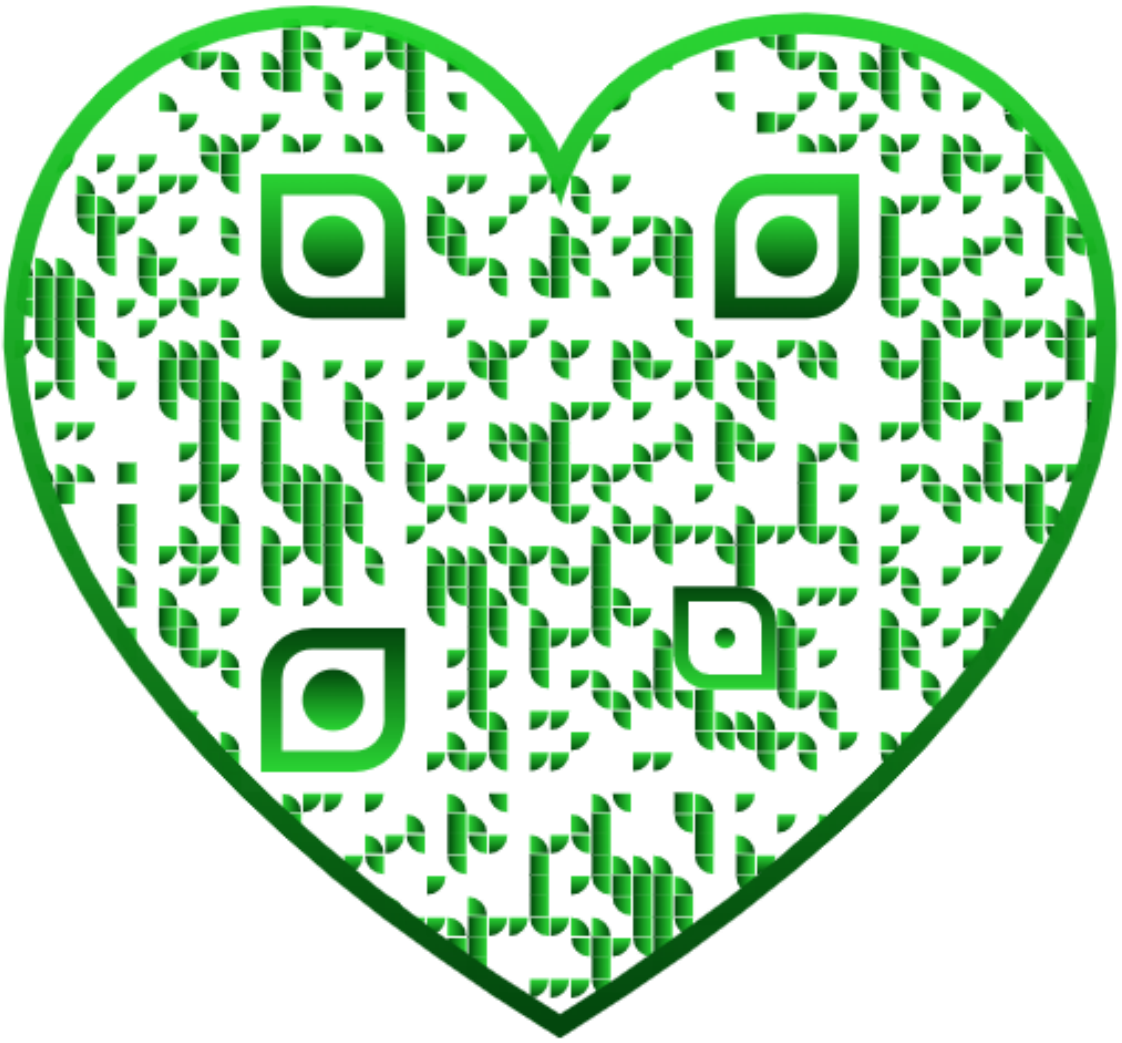

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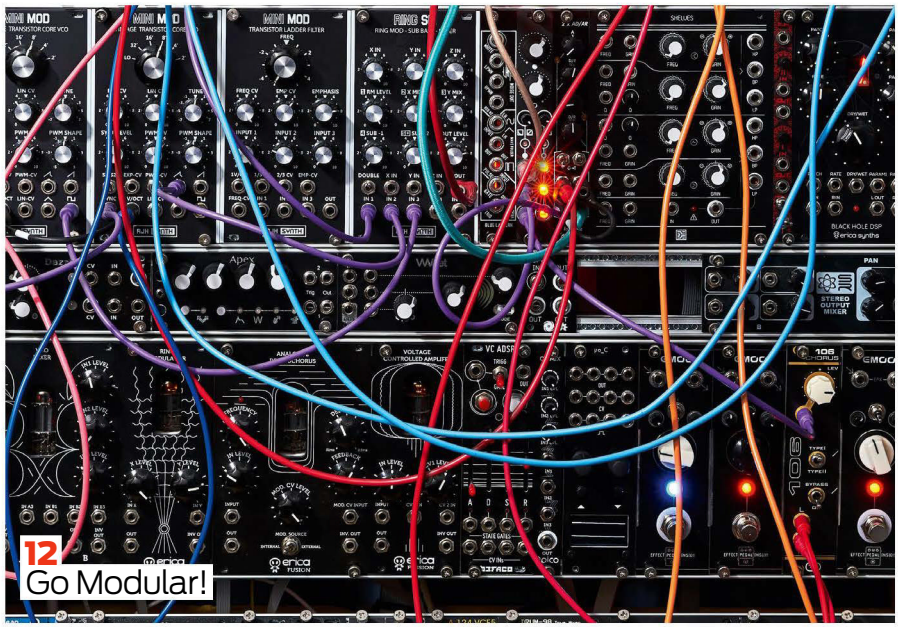


# Patch points

Few realms of music technology can eat into your hard earned savings quite as rapidly as modular synthesis. Modular synths can be powerful things and are nearly endless in scope, but those possibilities come with serious cost. Pick up an some oscillators or voices, a filter, amp, a few utilities, maybe a sequencer to control it all – before you know it the price tag can run into the thousands of dollars, and that's without even considering a case to power and house it all.

I might sound like I'm trying to talk you out of the concept of modular synthesis completely; I'm not, few approaches can be as fun and endlessly creative. The point, however, is that to avoid wasting your hard-earned cash, it's a good idea to approach your system with a proper plan.

This is what we aim to assist you with in this month's cover feature. To help you establish exactly what you want to create and what you'll need to achieve that. You'll be patching like a pro in no time!

**Si Truss**
**EDITOR-IN-CHIEF**

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**Hear all of this month's tutorial audio:** musicradar.com/how-to/em464-august-2023-examples

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# SSL's UF1 DAW controller promises to "set a new standard"

## Control up to three DAWs simultaneously with a single fader

The idea that you can take "comprehensive" charge of your DAW using a single fader controller might seem illogical, but that's the claim that SSL is making on behalf of the UF1.

This new controller might be the UF8's (much) smaller sibling, but it's still said to pack in the features. As well as the 100mm motorized fader you also get dual high-resolution displays, soft-feel rubber keys and a weighted jog wheel, all wrapped up in a metal chassis.

You're also able to control your DAW's pan settings, sends and plugins, and customize the 46 soft keys to suit your workflow. Plus, the UF1 integrates tightly with the new SSL Meter plugin and existing 360° software.

The device can actually control up to three DAWs simultaneously, and comes with profiles for Pro Tools, Logic, Cubase, Studio One, Ableton Live, Luna, and Pyramix. Your projects can be navigated with both the jog wheel and dedicated transport controls, and you can also access your DAW's automation modes.

Displays can show track names, parameters and time, or feedback from the SSL Meter plugin. A copy comes in the box; it can display Peak & RMS levels, K-System, stereo balance, phase correlation bar, Lissajous phase scope, 31-band RTA, VU and PPM metering.

As well as being suitable for use alone, the UF1 can also function alongside the aforementioned UF8 and the UC1 plugin controller. It's available now, for $750. em

"IT MIGHT BE THE UF8'S (MUCH) SMALLER SIBLING, BUT IT'S STILL SAID TO PACK IN THE FEATURES"

# The RX1200 plugin could be the closest you'll get to having an E-MU SP-1200 in your DAW

Released in 1987 and famed for its crunchy, lo-fi sound, E-MU's SP-1200 is widely considered to be one of the greatest and most influential samplers in history. In fact, it's still highly sought-after, but if you can't afford a second-hand original or creator Dave Rossum's $4k 2021 reissue, Inphonik is offering a 'next best thing' alternative in the shape of the RX1200 plugin.

As you'd expect, the RX1200 is all about that sound, promising to put the SP-1200's unique sonic signature into the hands of today's producers. The 12-bit resolution, 26.041kHz sample rate and SSM2044 low-pass filter have all been carefully emulated, as has the aliased pitch tuning. At the front end of the signal chain, you get an input amp emulation, too.

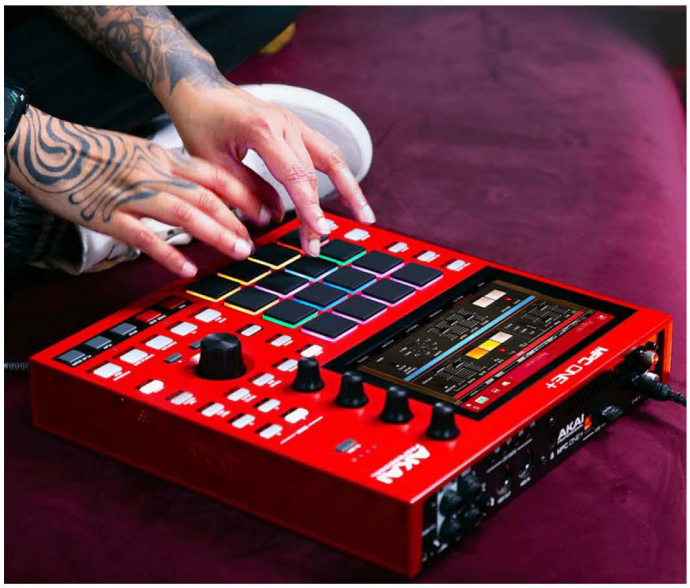
Although the RX1200 has the same look as the SP-1200, Inphonik has made some changes to the interface and workflow, simplifying things a little to make it more accessible. The focus here is on sample performance, experimentation and happy accidents: you get four banks of eight pads, and you can move the faders to tweak note tuning, volume and the decay envelope. There are eight assignable outputs, too, plus the SP-1200's dialing numbers, system functions and internal sequencer have all been removed, the theory being that your DAW has all this covered off, anyway.

There are also improvements: unrestricted sample length, support for stereo samples and a visual waveform sample editor. Plus, you get 900 samples and 50 presets, with the promise of more to come. In other words, the RX1200 gives you all the best bits of the SP-1200 with none of its limitations. That's pretty much the theory, anyway.

The RX1200 is available now for PC, Mac and Linux in VST/AU/AAX and Reason Rack Extension formats. It costs $29/£26.

You can also buy it in a bundle with Inphonik's RX950 plugin. Released in 2018, this emulates the signal path of the Akai S950 sampler. The so-called RX Bundle costs a reasonable $39. em

# Akai launches the MPC One+



Akai is continuing to celebrate the MPC's 35th anniversary with the launch of the MPC One+, an enhanced version of the standard MPC One music production center. This follows the release of the MPC X Special Edition, a retro-looking but more powerful version of the MPC X.

Instead of coming in vintage MPC grey, like the MPC X SE, the MPC One+ is an altogether brighter beast thanks to its red case. Under this dazzling hood, the storage space has been increased from 4GB to 16GB, which is a useful upgrade, though unlike on the MPC X Special Edition, there's no increase in RAM, which remains at just 2GB. It's also worth noting that there's still no built-in rechargeable battery, either, so the MPC One+ isn't as portable as its pricier standalone stablemate.

On the plus side, the connectivity options have been expanded and now include WiFi, Bluetooth and Ableton Link 3.

Of course, a lot of the original MPC One's key features are here, too: a 7-inch touchscreen, 16 RGB-backlit, velocity- and pressure-sensitive pads, eight CV/Gate outputs and MIDI I/O. And, for a limited time, MPC One+ customers will be able to choose one of its compatible plugins for free (including the brand-new Roland-emulating Air Jura synth, for example).

The MPC One+ is available now for $870. em

# Arturia releases FX Collection

Arturia's FX Collection has evolved into one of the best plugin effect bundles you can get hold of, containing – to use the company's own words – a whole lot of processors that you'll actually use.

With the release of version 4, the FX Collection's roster now runs to 30 plugins, with four new entries. That said, only one of these hasn't been available before: the Rotary CLS-222 Leslie rotary speaker emulation. Famed for its use with Hammond organs, the Leslie enables you to create some serious stereo swirl. Arturia's version also offers new features that include a valve preamp, separate bass and treble speeds and an interactive visualizer.

The other new kids on the FX Collection 4 block are Dist Coldfire, a dual engine distortion, and Filter MS-20, which combines the famously filthy filter from Korg's synth of the same name with a distortion section. It's worth noting that this was given away for free at the end of last year, so you may well have it already.

Finally, there's Rev LX-24, a recreation of the classic Lexicon 224 reverb that offers both classic and contemporary interface options.

A few of the other FX Collection effects have been updated, too. Bus Force gets overdrive gain compensation; Efx Fragments now has 40 additional presets and an updated modulation workflow, and both Bus Force and Rev Spring-636 have oversampling quality options.

There are also upgraded accessibility features across the board, NKS VST3 and Mac M1 AAX support, and various bug fixes and optimizations.

Running on PC and Mac in VST/AU/AAX formats, FX Collection 4 is currently available for the introductory price of $320 (regular price $535). And if you log in to your Arturia account, you may discover an even better offer. em

# Klevgrand's Richter is a 'tectonic', super-heavy compressor

Yes, it's another compressor plugin, but Klevgrand believes that, with Richter, it's managed to do something a bit different. This "tectonic" device is designed to achieve earth-shaking levels of compression without creating too many audio artefacts, and all via a very simple interface.

There are just two main controls: Transients and Amount. The first controls "how the internal envelope follower will react to transients vs continuous/lasting sounds," while the second dictates how much compression is applied.

The idea is that you use these two knobs in tandem to get the style and amount of compression that you want, whether that be on vocals, drums or anything else. A three-step boost switch can be engaged to push things even harder, and you can also adjust the makeup gain, dry/wet mix, input trim and a simple EQ. If you're looking for starting points, check out the factory presets.

The effect that Richter is having is visualized in the waveform view, but the idea seems to be that you'll spend less time analyzing and examining, and a fair bit more time just tweaking and listening.

Richter runs on PC and Mac in VST/AU/AAX formats priced at $70. There's also an iOS version (AUv3 and standalone) which is available for just $13. em

# Air Music releases new Juno-60 emulation, Jura

Air Music has turned its attention to Roland's Juno-60, the 1982 synthesizer that the company is now emulating in its new Jura plugin.

You'll note from the screenshot that Jura is giving off strong visual Juno vibes, and if you're happy to operate it using an emulation of the original front panel, you have the option to do so. However, there's also an extended, modern GUI. Switch to this when you want to dive a little deeper.

As well as all the original features, extras include a VCF with saturation and drive, two DCO noise types (modern and vintage) and a second envelope that adds another string to your sound design bow. And, as well as the classic Juno chorus section, which features three modes and a mix control, there's a further effects section that offers delay, reverb and 3-band EQ.

Oh, and as well as being playable in the authentic six-voice configuration, you can also extend the polyphony and make use of Unison and Chord modes. Jura runs on PC and Mac in VST/AU/AAX formats, and also inside Akai Pro's MPC and Force standalone hardware devices. The plugin is priced at $150. em

# UNDERSTANDING:

# Monitor placement

There's a lot more to effective monitoring than simply buying the best products you can afford and plugging them all together. Setup plays a huge part in ensuring you get the most out of your equipment and environment

## POSITIONING YOUR MONITORS: 7 EASY STEPS

### ORIENTATION

1 Decide an orientation within the room. If your shortest dimension is around four metres or more, consider setting up so that the width is the longest dimension. Space to the sides of the monitors helps to support stereo imaging and reduce the effective strength of side wall reflections.

Setting up longways allows for a greater depth of bass trapping at the rear of the room and provides more space at the front to keep your listening position out of the middle third of the room.

### WALL SPACING

2 Decide how close to the front wall (the one you face) the monitors will go. Unless your room depth is over ~9m it's best to keep the distance from the wall to the front of the monitor 1m or less, but don't let the rear of the monitors get closer than 10cm to the wall. If ported to the rear, a gap of 30cm or more is better.

### SMALLER ROOMS

3 For width spacing, setting the spacing between 1m and 1.6m, measuring from the centres of the LF driver cones, gives you plenty of stereo image width in small and medium-sized rooms.

### TRIANGULATION

4 Your listening position should be the point of an equilateral triangle with the monitors. Using the above spacings, this position will be around 0.87m to 1.39m back from the fronts of the monitors. Your head should be equidistant from each of them, a distance that is the same as their LF driver cone spacing.

### FACE-TO-BASS

5 If you haven't already, turn the monitors in to point directly at your head. This should mean that, by virtue of the equilateral triangle, they form a 60° angle (each 30° from your line of sight). Make sure the monitors are facing flat. If you want to raise them above your seated head height, keep the angle shallow (max. ~15°).

### CO-VIBRATION

6 Mount your monitors with some form of decoupling to prevent them transmitting vibrations elsewhere. Dense/heavy speaker stands, such as stacked concrete blocks, work well. Sitting the monitors on metal spikes reduces their contact surface area and thus attenuates the transmitted energy. Foam pads are also great for decoupling. Combining dense and springy materials can be a great approach and is often cheap, too, as bricks, blocks and foam are common. Avoid mounting monitors on the same surface.

### RAISE THEM UP

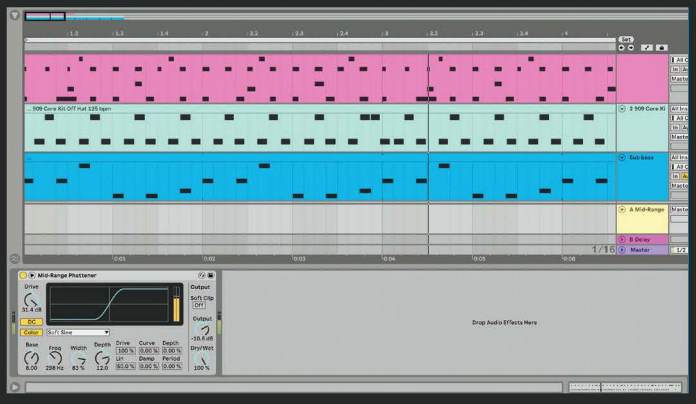
7 Seating your monitors on or close to flat surfaces will add more phase shift and cause a degree of comb filtering. The more the monitors are raised up from these surfaces the less pronounced the comb filtering, though you won't be able to avoid it completely. Try a few positions to find a compromise. em

# Quick effects tips: Part 2

Get more out of your productions with our series of quick and dirty effects tips

## ADD PRESENCE TO A SIMPLE BASS

**Sine wave basses are great for subby low-end reinforcement but sometimes they lack a little weight, creating a frequency gap between the bass and the lower mid-range. You can't open the filter on a sine-wave bass as there's no upper frequency content present in the sound. Instead, send the bass to a distortion effect via an auxiliary and configure settings to hit the bass and 'disperse' this to overdriven higher frequencies. Why do this on an auxiliary rather than 'in-channel', via an Insert? If you use an auxiliary, it's much easier to balance the dry original sound with the distorted treatment and, using automation, a doddle to vary that relationship from one section of your track to another.**



## GATE EXPECTATIONS

Heavy reverb presets with very long times can end up producing sounds with little to no dynamics in them. Using gates and modulation effects on patches like this can inject some life back into the proceedings.

## RE-LEVEL

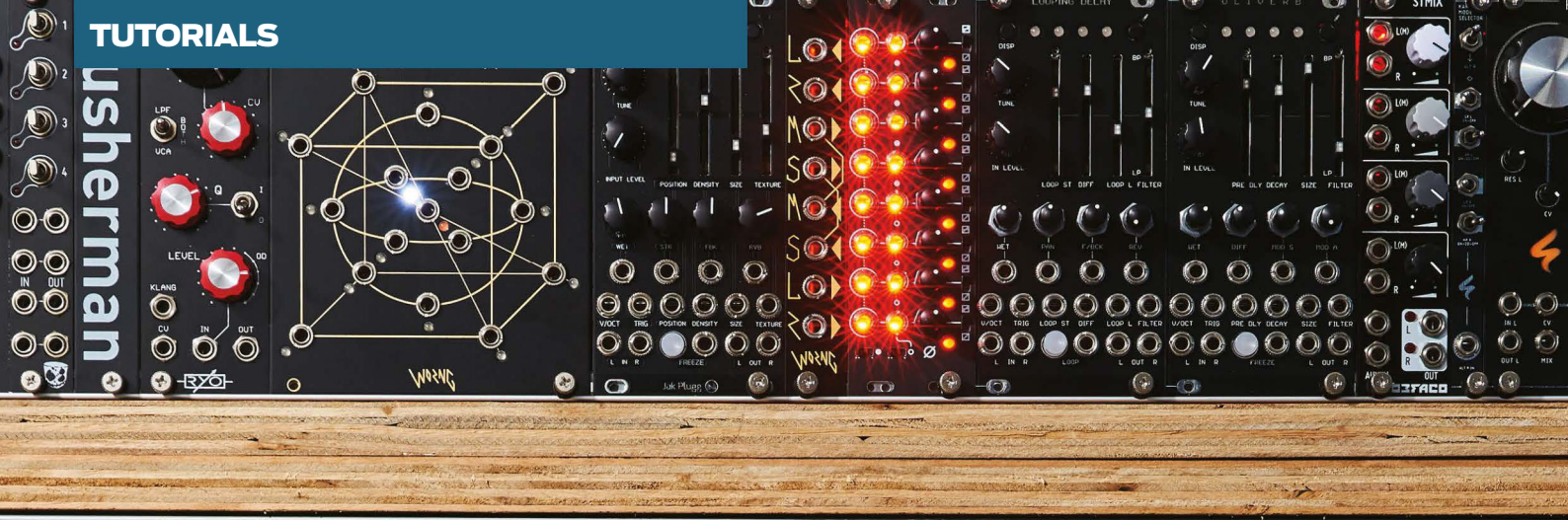
**Effects like drive and distortion add loudness, so pull back your device's output gain to compensate. It's easy to confuse something sounding 'better' with it merely being louder. When you bypass the effect, you'll hear how the signal has changed. This is particularly important to try and keep an eye on when one effect feeds into another, as an increase in level caused by a change to the first effect, such as a distortion, could have a big impact on the response of the next, like a limiter or a compressor.**

## VARIED 'VERBS

Vary the length and intensity of reverbs throughout your mix. Contrast between spaces will help build a more interesting and compelling mix. Use everything from close ambience through to large plates and halls. Try to avoid using the same reverb send for everything.

## WANT MORE TIPS?

Come back for more next issue, and revisit our playlist of 20 video synth tips – in a handy phone-friendly format – at: **bit.ly/quicksynthtips**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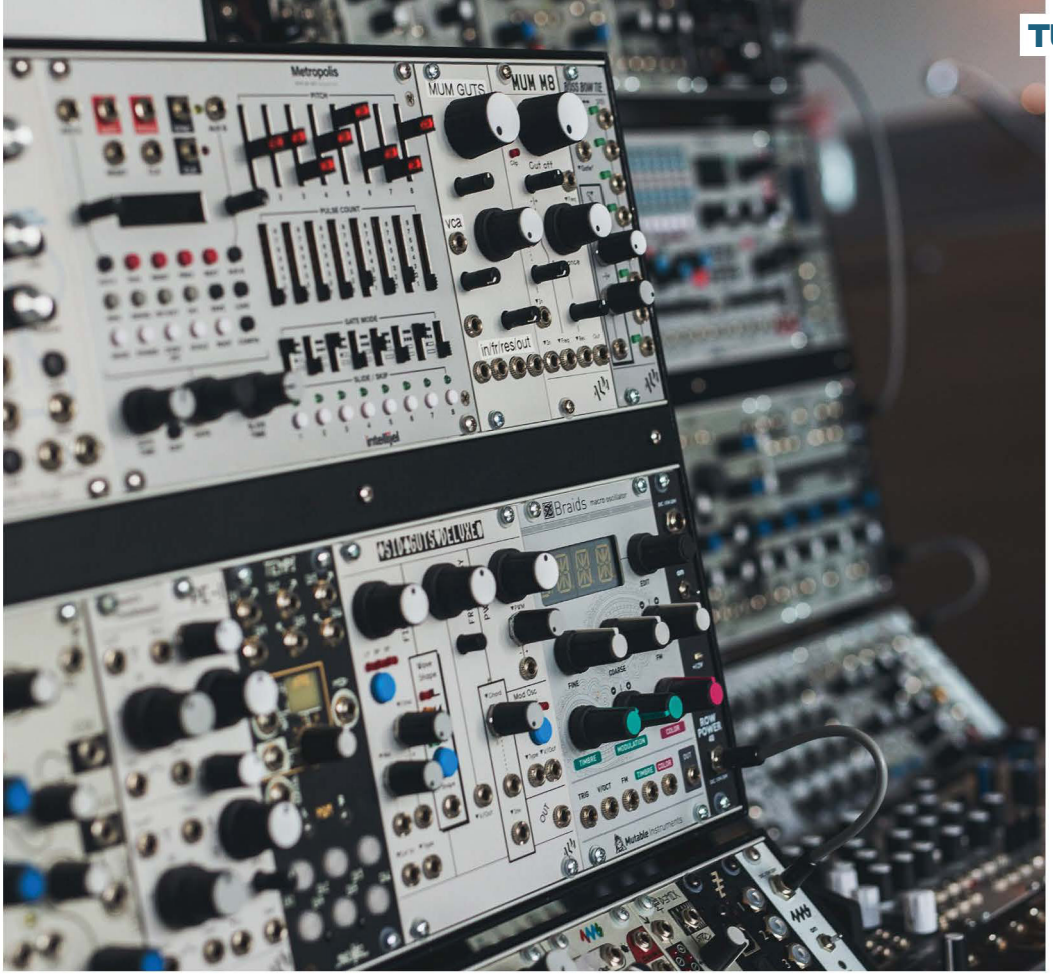



# The beauty of modular synthesis is that you can take it in any direction you like. Design your dream setup with our end-to-end guide

The appeal of modular synthesis is, above all else, its flexibility. By allowing users to mix and match the core building blocks of electronic instruments at will, a modular setup can be pretty much anything. Want to recreate the signal path of a classic analog synth? Create a self-generating ambient patch? Focus just on drums, sequencing or effects processing? Modular does all of this and more.

If you're new to the modular world, it's difficult to know where to begin. Sure, some users go for the maximalist approach: buying every module they can lay their hands on, plus a bucketload of extra long patch leads, and creating a behemoth system that can do anything and everything. We wouldn't necessarily recommend this though: the strain on your finances and living space can lead to divorces and destitution.

A better tactic is to establish what you'd like your system to specialize in and start with the bare minimum modules needed to achieve it. Not only is this a far more cost-effective approach, it will also encourage you to really experiment with that core group of modules before moving on. Once you've established the limits of that basic setup, you can work out precisely where you need to expand and what tools will help you do so.

Start by asking yourself what you have in mind. Do you want to create sound or simply process it (or both?). If you're building a synth, what kinds of sonic textures do you want? Analog sounds, complex wavetables, or samples and granular synthesis? Do you want to sequence from within your modular or are you happy to trigger from an existing controller, sequencer or DAW?

A great way to start is to plan your setup virtually first. Modulargrid.net is a widely-used site for experimenting with layouts, allowing you to establish how different modules will fit into a case and work out power consumption.

As for testing the sonic possibilities of a setup, VCV Rack is a free application that will allow you to put together a virtual modular rig using a host of emulated modules (both free and paid-for), and can be a great way to get your head around modular concepts before diving in. Software such as NI's Reaktor Blocks, Softube Modular or Bitwig Studio's The Grid are great too.

Let's dive into the nuts and bolts of this excellent art…

## THE BASICS

For newcomers, the modular realm can seem full of oddball terminology and requirements, all of which can be off-putting. Before we delve into the modules themselves, let's recap a few of the basic principles of hardware modular synthesis.

## WHY EURORACK?

In this guide, we're focusing on the Eurorack modular format. Synth modules come in all shapes and sizes and not all are compatible in terms of the cases they fit and power used. Eurorack is the closest thing we have to a unifying standard though, and over the past few decades since it was first introduced – by Doepfer in 1996 – it's rapidly expanded in popularity. In modern terms, Eurorack is the most accessible, broadly available and compatible form of modular synthesis, so it's the most sensible place to start.

## CASES

Modules can't be used alone and need to be housed in 'something'. There's no end of Eurorack cases available these days, from simple desktop 'skiff' cases to those from the likes of Arturia or Moog that are designed to expand those brands' existing synths. You can even take the DIY route and build your own.

When considering what case you need, the most important consideration is size, expressed in U for height and HP for width. Physically, the height of Eurorack modules is equivalent to 3U of studio rack height, with module widths measured in horizontal pitch units (HP). Most functionally useful modules (non-blank panels) require at least 2HP of space, and cases come in a plethora of widths.

Be aware too, that some desktop cases might lack the depth needed to house and power larger modules, so be sure to take this into account.

## POWER

Eurorack uses a common power supply system based on a dual rail (+12V/-12V/GND) design, with modules connecting to it via a ribbon cable. However, these come in both 10 or 16-pin variants, with the 16-pin version capable of sharing a CV and gate bus, as well as delivering an additional 5V DC supply. Some modules specifically need this 5V line, so ensure that your case/PSU can deliver this via 16-pin sockets.

Power supplies may come built into the case, with rigid enclosure-mounted sockets, or as a loose ribbon cable connected to an external power supply, although in both cases you will need to ensure that the total current requirements of all modules can be met.

# Oscillators

## The beating (well, technically oscillating) heart of your modular project

Although they come in many flavors, types and capabilities, oscillators have one thing in common: they are the core voice of your system. Before any modulation, filtering or mixing, the oscillators provide your patch with the fundamental tone you work with.

Almost all of them have the ability to either manually set pitch or take a volts per octave patch for tuned, melodic output, although the more explorative and experimental modularists may choose to use them as simple sound generating devices.

From that point on, things can vary wildly, with different modules featuring a variety of working methods, built-in modulation and patch points for connecting to the rest of your rig.

There are three common types of oscillators. Analog, which produces the classic tones that many people associate with synthesizers and most often have a number of classic waveshapes; generally a selection including square, triangle, pulse, saw, sine. While those tones are desirable to many, the downside is less accuracy, meaning the occasional tinkering with trim pots.

Wavetable is another type, and tends to have more versatile and varied options but can lose some of the softer organic timbres and sound more modern. Then there are digital voices, which often have the widest range of tones with physical modeling options, precise controls and/or built-in effects.

Another option would be sample players which, while not true oscillators, can be used as a voice. There's also the possibility to use modules such as LFOs at audio rates, making them playable voices, and some filters can be played too.

Something to note is polyphony, or lack of it, in modular. While there are a number of multi-voiced modules, they're often unsuitable for smaller rigs. There are exceptions, like the Knobula Poly Cinematic, but mostly modular remains monophonic.

### Erica Synths
### Black VCO2

This VCO is a classic-sounding voice that offers plenty of range, a number of waveshapes and patch points galore for shaping and modulating the tonal output. This is a staple for many. For more grit, go for the Fusion 2 VCO instead.

### Knobular
### Poly Cinematic

An 8-voice polysynth in a small module, that includes a filter, a lush sounding reverb and waveshapes that include a rarely seen organ. This is a perfect pad machine but can do so much more, and is a great way to play chords easily in Eurorack.

### Mutable Instruments
### Plaits

This hugely popular digital voice is incredibly versatile. It offers a wide range of sounds, split into two types; melodic and percussive. There's plenty of tone-shaping tools on offer, and modulating Plaits is an expressive and enjoyable journey to undertake.

# Filters

## Introducing the first elements of control…

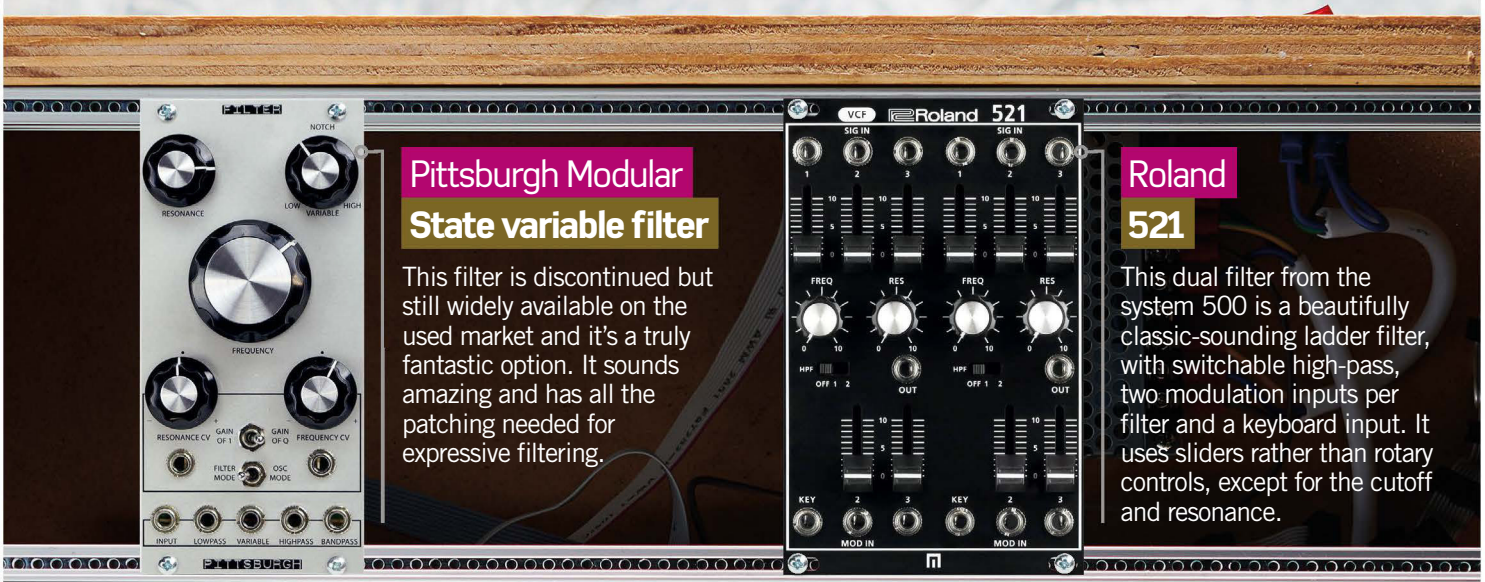
For many modularists, the filter is the go-to tool for sound-shaping on the fly, which is why so many filters have an oversized knob for the cutoff. In essence a filter is a module that takes incoming audio and removes a controllable portion of the frequency range. There are various types of filter but the most common are low-pass and high-pass filters. A low-pass filters out progressively more high frequencies as the filter is closed, while high-pass does the opposite.

You will see other types such as band pass, which allows a specific frequency range to pass through. You may also see state variable, a filter that encompasses these different filter types in one unit.

A big part of the characteristics of the filter comes from the resonance, which accentuates the harmonic content at the transition between filtered and unfiltered frequencies. Most filters have a control for setting amount. It's the interplay between these two controls that has the bigger effect on output, varying from the full signal, through almost squelchy sounding, to the softest fundamental wave, with no harmonics.

Filters will often feature a few tools for manipulating the output. These can come in many shapes and sizes but there are a few common options. Keyboard tracking adjusts the cutoff point in relation to an incoming pitch. Meanwhile, an envelope input is where you patch an envelope generator into the filter, so it opens and closes based on the modulation shape you send it. This is a particularly useful one, as it makes it easy to have notes that start soft then open up to be brighter, then close again. This can add definition and clarity to a pad, for example.

As well as the different variations you get for frequency filtering, there are also different architectures. There's the ladder transistor type, which gives a warm Moog-like sound, or the SEM type, which is more Oberheim-sounding, plus numerous other styles.




### Pittsburgh Modular
### State variable filter

This filter is discontinued but still widely available on the used market and it's a truly fantastic option. It sounds amazing and has all the patching needed for expressive filtering.




### Roland
### 521

This dual filter from the system 500 is a beautifully classic-sounding ladder filter, with switchable high-pass, two modulation inputs per filter and a keyboard input. It uses sliders rather than rotary controls, except for the cutoff and resonance.

### Instruo
### Tràigh

This may be a ladder filter but it's so much more too. It has a built-in, three-channel mixer, frequency modulation and – although large – it looks and sounds beautiful, from silky smooth to crisp and defined, to characterful with added modulation.

# Sequencers

## The brains of the operation

Sequencers can be the heart of a modular system and come in an array of flavors, from classic analog eight-step modules, with fewer options – perfect for looping simple melodies – through to the massively complex digital sequencers that, while harder to grasp, can be programmed for a full live set.

Fundamentally a sequencer is used to send pitch and trigger info to the rest of your system, but increasing numbers of features have been added to many, so that modern sequencers can output multiple channels of pitch information, send gates and triggers, as well as modulation, so they really can act as the brain for a rig. Some sequencers add even more, with options to add controlled randomization to a sequence, allowing patches to evolve over time, while remaining in key and musical.

Consider different use cases. Do you want simple pitch output and if so, how many steps? 64 tends to be the upper limit. Are you after gates and triggers? Do you want the ability to modulate? Sequencers that cater for these needs are becoming more plentiful and many offer multiple channels. Erica Synths Black Sequencer provides four channels with its 'magic' button providing musical variation. Likewise Intellijel's Metropolix has two channels and a wonderful accumulator for programming controllable variation.

Consider outboard sequencing too. You could get your DAW to send MIDI to your modular rig or, for a computer-free solution, something like Korg's SQ-64. If you prefer keyboard playability too, then Arturia's Keystep Pro has four channels of sequencing, patch points for pitch, mod and gate, and one channel that can also be a drum sequencer, with dedicated patch points for each trigger output.

Lastly there are semi-modular synths that integrate very well and often have onboard sequencers that can be patched up into the main rig. Moog's Mother-32 is a fine example.

### Wavefonix
### 8-Step Sequencer

A classic sequencer, solidly built, with toggle switches for skipping and repeating steps and dual outputs for extra versatility. If you want a simple but excellent sequencer, look no further.

### Erica Synths
### Black Sequencer

A four-channel sequencer with a lovely tactile interface, that can add musical variations to pitch, gates and modulation with a single button. Offers ratchets, channel muting and more.

### Intellijel
### Metropolix

This jam-ready module is a joy to use, with two channels, a very hands-on interface and fantastic tools for shaping phrases. It has color-coded lights for instant feedback too. A very intuitive device.

# Effects

## The cherry on the cake

Out of all the modules available, effects units are possibly the most widely varied. These come in many styles and types, so let's deal with a few of the most common here.

Perhaps the most widely used is reverb. Spring reverbs, whether digital emulations or a real tank, give a classic retro sound admired by many. There are modules that bring this into Eurorack format, although an authentic tank will need housing somewhere. Then you have a vast array of digital reverbs. Some replicate plate reverbs or older, classic digital reverbs, while others take things into new territories. Recently modules have appeared that take reverb further than ever, offering effects like shimmer and glimmer that accentuate harmonics and produce beautiful soundscapes, often with built-in modulation.

Delays, again, come in various guises. Some give simple repeats of incoming audio, others boast deep sound design tools. Others pay homage to tape delays of old, with authentic-sounding wow and flutter.

As well as phasers, flangers, choruses and other common effect types, there are a number of other processors types frequently seen in modular synth rigs. Ring mods, and filter banks (although these could arguably live in the filter section just as easily) are common. Perhaps the best example of these kinds of modular-centric units is the wavefolder. These modules take the wave produced by a VCO and flip it back on itself to make new, interesting tones with boosted harmonic content. Similarly, waveshapers alter the waveform based on user-defined inputs, away from the initial VCO's output.

As with effect pedals favored by guitarists (many of which also find their way into a synth player's signal chain) you can also find multi effect units, some aimed at a specific type of effect, others with a wider application, covering many processor types from within a single module.

### Erica Synths Black Hole DSP

A stalwart multi-effects unit, with 24 different effects, covering delays, reverbs, choruses, flangers, phasers and more. Great layout and a space saver, at just 16hp.

### Tiptop Audio Z-DSP

A fantastic time-based unit, the Z-DSP sounds wonderful and is easy to use. The magic here is in the swappable chips that transform it between various effect types, from reverb, delay, to chorus.

### Strymon Starlab

A personal favorite, this reverb does a lot. Typical Strymon design and build, it features massive spacey reverbs, a delay and even a Karplus-Strong voice and has a built-in filter and LFO.

# LFO/modulators

## An extra hand

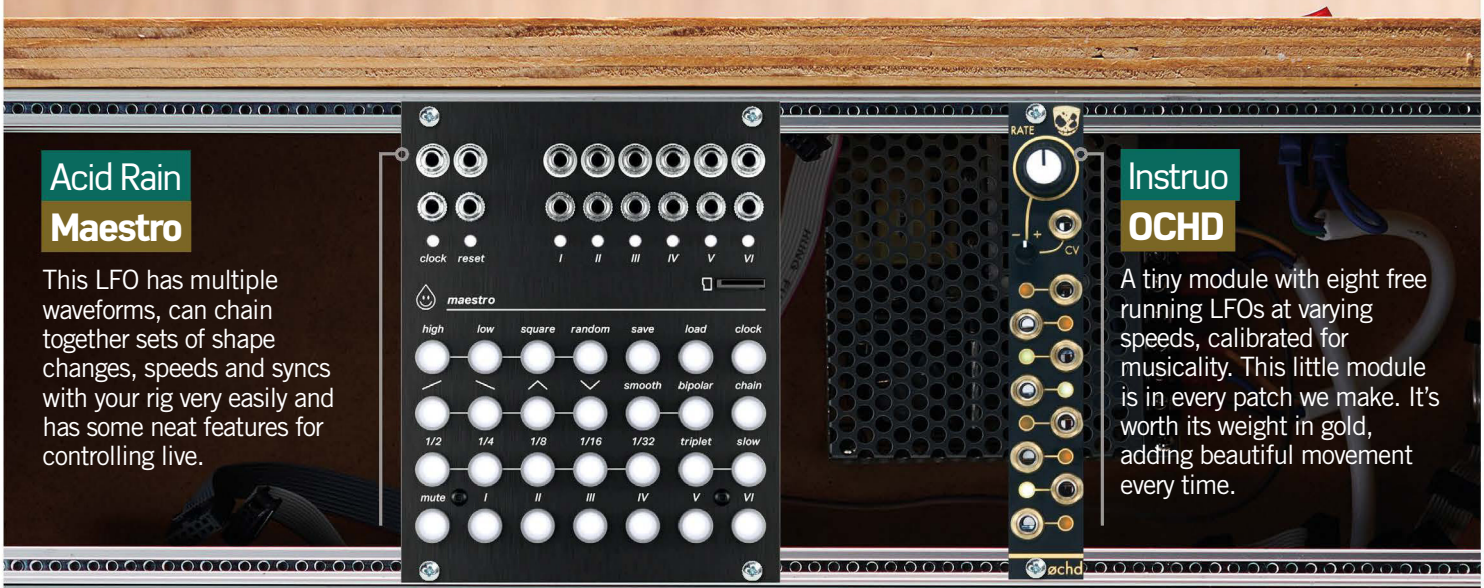
The biggest roadblock to success with modular is being able to make adjustments on the fly. With all those knobs and buttons how do you go about making changes to more than a couple of things at once? Well, modulation is the key. LFOs and other types of modulation act, essentially, as extra hands, taking on the tasks of changing (modulating) settings so you don't have to.

Pretty much everything in modular is controlled by voltage, so a modulator will create changes in voltage over time, which can then be patched into a parameter of another module.

An LFO is the most basic and common method of doing this. You set the rate, patch into, say, the cutoff of a filter and the filter will open and close repeatedly at that frequency. Most modules that have modulation inputs also have an attenuverter, which limits the amount of modulation to further control the overall effect. As with VCOs, LFOs are available in different waveshapes, with some breaking away from the traditional sine, square and triangle to create really unique modulations. Sometimes, that one extra hand isn't enough though.

When a repeating modulation becomes stale it may be necessary to adjust the LFO. There are a few ways of being able to do this; however, some modules have the ability to chain different LFOs together, so that you can move, for example, from a slow sinewave to a faster square wave, then onto a different speed of triangle, and so on. Clock speed may have an impact here but not to worry, most modulators have a clock input to keep things nicely in sync.

It's also possible to use other module types for modulation, for example, triggering one module to start a process, like opening a gate that lets through a voltage from a third device. Experimentation is key to getting the most out of the two hands you have and all of the extras that your rig provides.

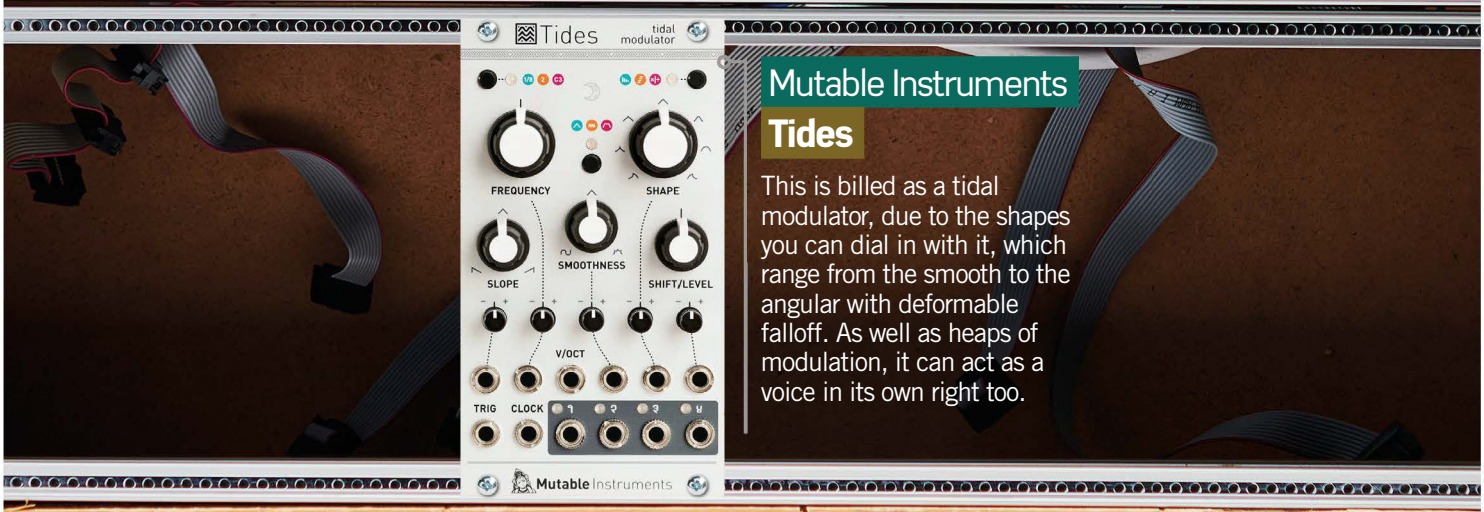



### Acid Rain Maestro

This LFO has multiple waveforms, can chain together sets of shape changes, speeds and syncs with your rig very easily and has some neat features for controlling live.

### Instruo OCHD

A tiny module with eight free running LFOs at varying speeds, calibrated for musicality. This little module is in every patch we make. It's worth its weight in gold, adding beautiful movement every time.




### Mutable Instruments Tides

This is billed as a tidal modulator, due to the shapes you can dial in with it, which range from the smooth to the angular with deformable falloff. As well as heaps of modulation, it can act as a voice in its own right too.

# Utilities

## Mults, mixers and more

While other categories we've talked about fall into neat groupings, utilities cover a wider range of uses. The clock divider is a common one. This does what the name suggests – breaking an incoming clock into subdivisions, so a single bpm can output a number of others, all in sync.

Mults split a signal, often into three, creating copies of the original. Buffered mults are best for splitting volts-per-octave – to counter voltage dropoff and retain accuracy.

Mixers do as you'd expect, although not all are made equal. Some only give you an amount control, while others add stereo panning, mute buttons and headphone amplifiers. There are also unity mixers that combine incoming signals with no controls.

VCAs, or voltage controlled amplifiers, are seen by many as the cornerstone of a good rig. The genius of a VCA is that not only can they control the volume of an audio source but also voltages so, combined with modulation sources, they can be used for many tasks, from dialing in further modulations, all the way to constructing sections of a track, to mixing tasks and much more. They really are valuable modules, so investing in a quad version is wise.

Envelope generators could be given a whole section of their own here but in essence, they provide the shape of a signal. Most often with attack, decay, sustain and release (although simpler models are plentiful too) an obvious use is to plug one into a VCA, so that a note rises in volume when triggered, decays to a set point, sustains for as long as desired, then falls off at the end, negating the on/off situation you would otherwise have. Envelopes can be used for many things other than this, often employed to shape the cutoff of filters, or add some swell to an effect.

There are many other utilities, such as logic modules, sample and hold, mute switches, booleans... The list really does go on, so investigate and see what sparks your interest. em

### ALM
### Pam's New Workout

This little module is a beast. It's a clock, clock divider, trigger output, sequencer and so much more, and should be in every rig. It is that good.




### 4ms
### Rotating Clock Divider

A small but incredibly useful utility, this does what it says on the tin, taking a clock signal and splitting it into eight subdivisions, from 1/1 to 1/8 and the handy rotate patch point lets you change how these output.

### 2hp
### Mult

A tiny but incredibly useful little mult, this is an easy win. It has two channels of three duplicates, so splitting a signal for use across a patch is a doddle, fitting into pretty much every rig that you can imagine, easily.

# OCTAVE ONE

Despite diverging from their techno roots, Octave One tell **Danny Turner** they'd sooner stop the music than sell their 909

© Marie Staggat

After debuting on Derrick May's epic Transmat compilation *Techno 2: The Next Generation* with the lush-sounding single *I Believe* (1988), Lenny and Lawrence Burden grasped the nettle and started their own 430 West label. Frequently assisted by brothers Lorne, Lynell and Lance, the duo's commercial success peaked a decade later with the techno/house banger *Black Water*, and the Burden brothers have rarely been out of the spotlight since.

Recognized for their high-energy live sets employing an armory of hardware synths and sequencers, their authentic approach to performing has continually enthused crowds on a global scale. Meanwhile, Lenny and Lawrence continue to break their own musical boundaries with their latest album *Never On Sunday* – an intriguing blend of ambient, atmospheric and vocal-based electronica, accompanied by remixes from Orbital and Skream.

**Growing up in Detroit, was the influence of techno pretty much inescapable?**

**Lenny:** When we started in 1989, our exposure to Detroit techno primarily came from the radio and clubs, but you could have easily escaped it because there wasn't a lot of it. Derrick, Juan and Kevin were already established and the first techno album to give Detroit techno its name (*Techno! The New Dance Sound Of Detroit*) had just been released by Virgin. We were actually on the second album, *Techno 2: The Next Generation*, so we were technically part of the second wave and by then it had really started to spread.

"ONCE WE GOT THE 909 I WAS HOOKED – THAT MACHINE IS LIKE A DRUG; I'D PLAY WITH IT ALL DAY. IT TALKED TO YOU!"

**You have three other brothers that are into production, too. That must have been some household growing up?**

**Lawrence:** Having all of us in the house playing music could be kinda chaotic at times. My mum liked to have music in the house no matter how bad it was, but always wanted us to be involved in music. It was also a form of discipline because she could count on knowing exactly where we were.

**Did you share the same musical tastes?**

**Lenny:** Mostly the same, but not totally. I'm not a huge jazz fan, but Lawrence and Lynell actually worked as a roadie for Bob James. We were all exposed to soul and R'n'B at home, and stuff like Elton John. Basically, everything you could think of, so our tastes definitely collided a lot.

**Lawrence:** Lenny always liked the harder edged stuff and I had to learn to appreciate that because my taste was more jazz and R'n'B-heavy like Barry White and Al Green. There's a nice age gap between all of us, so at some point our younger brothers Lance and Lorne brought in more of the hip-hop and the new style of R&B.

**What was the sequence of events that led to you to combine your talents as a duo and form Octave One?**

**Lenny:** We already had musical training from elementary school. Lawrence played saxophone in band classes and I played horns and drums. We actually started as a trio with my brother Lynell and took the same path as a lot of cats who made electronic music at the time. We bought some turntables, tons of records and started DJing and throwing parties. A lot of the electronic music was made in basement studios with low budgets, so we bought a couple of drum machines and synthesizers and started teaching ourselves. It seemed amazing to us that we could make a whole song with just a few pieces of equipment.

**Lawrence:** Lenny and Lynell bought the first gear, but I wouldn't put my money up because I was always the slack guy that mooched off anything that came into the house. They bought a Kawai R50 and Korg DD-1 drum machine and I started jamming and making drum solos out of those. Later, the guys bought the Roland TR-909 and 303.

**Lenny:** Actually, our first synth was a little toy Yamaha PSS-480. It had speakers on it and a solid bass like the Yamaha DX100, which made us want to track down one of those. We plugged it right into the amp.

**Lawrence:** Once we got the 909 I was hooked – that machine's like a drug, so I'd run it into a speaker and play with it all day. I could listen to the kick for hours because the sound evolved as it played – it talked to you!

**How did you get signed to Derrick May's Transmat label with your debut single *I Believe* with Lisa Newburry?**

**Lenny:** We used to send people cassette tapes so they could see what we were working on and got rejected quite a few times, but we were just working out of our apartment and learning. What's really weird is that my neighbour was Marti Bonds who was in Model 500 with Juan Atkins and his roommate was Jay Denham who also ended up on Transmat as Fade to Black. Carl Craig's sister lived upstairs, so we had our own little techno corner in our apartment building [*laughs*]. At first, I don't think Derrick May even listened to our tape – Carl was the one who listened to it.

**Lawrence:** We met Carl at Alan Oldham's house and started vibing and kicking it. From there, Carl pushed Derrick to listen to our music but I don't think he got it. Anthony Shakir used to engineer at Metroplex Studios and when Juan Atkins went out of town, unbeknown to him, his brother Eric would start renting the studio out. So we'd pay Eric money to rent the studio and Anthony would engineer. That's how the track *I Believe* came about, then Shakir sent our music with a bunch of other songs that were going to be on *Techno 2: The Next Generation* and Derrick picked it up from there.

**Around the same time, you started your own label, 430 West...**

**Lenny:** Apart from Richie Hawtin's Plus 8 and Carl Craig's Planet E, not that many people had started their own label back then. We did it out of necessity because Derrick didn't put out a lot of music on Transmat and we were ready for our next release. In those days there was no internet or book you could read on how to put out or master a record, let alone figure out manufacturing and distribution. We just borrowed some money and a fax machine and ran completely blind.

**Lawrence:** Lenny had a job that gave us access to the mail, so we could send all the packaging off rather inexpensively. It's funny because we were sending stuff overseas to people like Pete Tong all the time but had no idea who he was.

**Lenny:** We were primarily a vinyl label – selling records was our bread and butter. We come from a time when even a bad record would sell a couple of thousand. The strange thing was that even before streaming started becoming popular, Richie Hawtin had showed us Vinyl Scratch where you could spin an MP3 with a vinyl record synced to a computer. We thought, what the heck, this can't work? As things progress you learn to adapt, but record labels are not the same as they were by any stretch of the imagination. You have to change tactics when you can't balance out the promotion of a record with sales.
**Lawrence:** Adapt or die – that's what this industry is. 75% of our monetary gains came from sales, but a few years later it came from touring. Everything keeps morphing and shifting, so if you don't adapt you'll literally die off.

**Your second Octave One album *The Theory Of Everything* seemed to pull away from techno and move more into rap/trip-hop territory. What motivated that change in your music?**
**Lawrence:** We'd been playing with different genres and wanted to experiment but hadn't always presented that to the public. The track *Black Water* gave us an opportunity to get into that new world, but we just do what we want to do.
**Lenny:** We'd always recorded in our homes, but suddenly had access to really good studios – you can't go from working in your mother's house to that and not try something. But our fan base is great; they've stayed with us and given us the opportunity to do what we want knowing that we'll always come back to the Octave One sound.

**You had a surge of popularity with *Black Water* in 2000. Was that the trigger that allowed you to remix tracks for the likes of Massive Attack and Inner City?**
**Lenny:** It definitely expanded our audience, but we'd been doing remixes before that and already knew Kevin Saunderson from Inner City. We were even asked to do a remix for one of Depeche Mode's anniversary albums and were looking at doing *Behind The Wheel* or some of the slower stuff that Martin Gore had going on, but we couldn't stop to do it. They were basically our idols.

**Tell us about the new Octave One album *Never On Sunday*, which may confuse some people because you've also released music as Never On Sunday?**
**Lenny:** We're always trying to push ourselves musically and thought that we'd stumbled on something interesting but got all shy about it and imagined it would be better to drop it as a Never On Sunday record. We even released a piece of vinyl a couple of years ago featuring some of those tracks and people really liked it, so during the pandemic we thought let's just complete the idea and turn it into an Octave One record.
**Lawrence:** The pandemic gave us time to pause. We were doing so many shows and always trying to appeal to the dancefloor, but now we were at home and didn't have to worry about that so we just let things flow and created for ourselves. That's why a lot of the tracks sound a bit 'out there' – that's the best way I can describe them.

**Can you be more specific about how you feel the album is different to previous Octave One releases?**
**Lenny:** We did some vocal tracks, slower tempo things and dance stuff and sent it off to people. Skream did a remix and so did Orbital, at which point we felt that this should really be an Octave One record and decided to make *Never On Sunday* the album title.
**Lawrence:** We actually did a Never On Sunday show in Rome that came out amazing. It was a lot of fun and the applause we got was crazy. Sometimes it's just about timing, so when we saw the crowd reaction we thought people were ready for it.

**Apart from the remixes, the album's not all that beat-driven. There are more instrumental tracks and some of it's quite sci-fi-sounding?**
**Lenny:** As we were creating the record, we didn't know what it was – we just knew it was us. It took us a while to get it to where it is now and probably mixed up to 10 different versions of every track. Today, music is so disposable and records only last a couple of weeks. When we made *Black Water*, the record was ancient before people started playing and understanding it, so we hope people will give this album a chance too and take the full journey. We've made ten videos for all of the tracks, so it's a complete art project.

**Karina Mia adds vocals on three tracks. Was she involved from the very beginning?**
**Lenny:** When we did the show in Rome, we wanted to bring a vocalist out with us knowing that we wanted to have them on a few of the tracks. As brothers, we're used to just working together, so when we bring in someone else we really need to feel that full energy. We'd met Karina before and liked how we vibed together, so when she came back to us with a complete vocal arrangement for a few of the tracks we realized that we had something.

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**You mentioned Orbital previously who are also brothers and have famously struggled to work together at various points. How do you avoid confrontations?**

**Lawrence:** As the oldest I'm used to being quite bossy and have had to learn to let my brothers have their space. There is room for all of us; we just need to let each other breathe.

**Lenny:** It's about recognizing each other's strengths and weaknesses and letting people express themselves in the way they need to. I understand what Paul and Phil from Orbital have been through because Lawrence and I are together a lot more than we are with our mates – especially when we're on the road. I just have to be really conscious about when to back off a bit and let my man have his space. With so many boys in the family there's always been a ton of fights, but as you get older you don't want to fight anymore *[laughs]*. You want the music to be the best that it can be and we're already strong together, so let's just add to that strength. I'd rather survive with my brothers than without.

**You and Lawrence appear to have a very intuitive partnership – especially on stage…**

**Lenny:** A lot of why we fit together is accidental. Initially, I was supposed to play live by myself and Lawrence would DJ his set right before I was supposed to hit the stage. I had his mixing console and all of his gear in front of me and was trying to do everything myself when Lawrence jumped on stage. We hadn't rehearsed anything, but ever since then he's been behind the mixing desk and how we work together in the studio has been equally organic.

**Lawrence:** When we play live, gear is sometimes swapped out and Lenny will throw me a curveball, but it's mainly about the mood of the venue and the people. We might have a base idea of what we like to do, but there are no rules. We play off each other and sometimes forget the crowd is even there. As long as you're having a good time, it'll translate to them.

**Do you have to be in the same room to make music?**

**Lenny:** During the pandemic we worked remotely a lot, especially as Lawrence lives about an hour away, but we work with all of our brothers when we make music – they're our production partners. With *Black Water*, Lorne was the one who initiated the track; we just finished it. That's the advantage we have over a lot of other bands. On this project, we were all in the studio and Lorne and Lawrence came in to play some things, so the songs came to us in lots of different ways.

**Does the TR-909 still play a prominent role in the studio?**

**Lawrence:** We don't interchange gear. We might buy something and sell it years later, but with the 909 we always say that if we sell that then it's over. We might trigger it or sample it, but if you listen to our music it's always been 909-driven. That machine has a lot of warmth to it – even the claps are warm, so that will be the very last piece of gear we sell because we love it so much.

**Do you find it necessary to process the 909?**

**Lenny:** Initially we didn't even know what a compressor was, but because we have so much stuff and records are no longer made the same way we have to process it. If you want your record to be played in the same set as someone else, you need to add compression and limiting, but initially we'd just add a little reverb and EQ on the board and let it go.

@playdetroit

"ADAPT OR DIE. EVERYTHING KEEPS MORPHING AND SHIFTING, SO IF YOU DON'T ADAPT YOU'LL LITERALLY DIE OFF"

**How does the TR-8 compare?**

**Lenny:** We used the TR-8 a lot live and found that everything was right there in your face and you didn't have to do a lot of menu diving. Sound-wise it was close, but the thing about the 909 is that each one has a distinctive sound of its own because it's not a completely digital machine. We know the characteristics of our 909 so well that we can even tell when people sample us. The Roland architecture has that – everything is distinctive. One Juno 106 doesn't sound like another because of the age and the fact that the components are wearing out and going out of tune. The TR-8S is a very good drum machine too, but it's not a replacement for a 909.

**Which hardware synths are you most frequently using?**

**Lenny:** The Roland MKS-80, which is basically the rackmount version of the Super Jupiter, and the MKS-70, which is a version of the JX-10 (Super JX). We also like the Studio Electronics ATC-1, which is like a Moog but has four different filter cartridges – a Minimoog, TB-303, Arp 2600 and SEM. It's a lot of fun making sounds out of that thing. We also use some soft synths from Native Instruments and run a lot of stuff through the Lexicon PCM42 digital delay.

**Where do you generally stand on plugins?**

**Lenny:** Soft synths definitely have their place, especially for when we're on the road. We have tons of plugins. We'll use anything that we think is going to make a good sound – it doesn't matter if it's inside of a box or a big expensive piece of analog hardware. Two of our brothers use Maschine and we have the whole Komplete set from them – my job is to marry it all together and make sure that it all makes sense.

**What's the patch editor device sitting between your synth hardware?**

**Lenny:** That's the KiwiTechnics Patch Editor, which is for most of the equipment that we have that doesn't have a bunch of knobs. It's pre-programmed to edit most of our Roland rackmount stuff and edits eight of the synths in the room. The way that the room is set up, you don't even have to move it, you just select which synth you want to play, open Pro Tools and hit record.

**You have a big 64-channel desk at the heart of the studio. How important is that to the characteristic of your sound?**

**Lenny:** Huge. We use a Midas Venice mixer in our live sets and really like how it opens up our sound and the warmth of it. It's a big analog piece of gear but we wanted to find the equivalent version of it for our studio because we wanted to try to get that Midas sound into our records. Lawrence plays it like he plays the mixer live and everything runs through it. Even when our brothers send us soft synths, they all run through the board to give them a livelier and warmer feel.

**Big mixing desks tend to be very expensive. Did you get a special deal?**

**Lenny:** One man's trash is another man's treasure. When all the digital synths came out, people started unloading all of their analog synths. They thought, 'Oh, we can get all these great sounds digitally, why do we need this full Roland piece?' We remember a time when they were pretty much giving it away. Hall & Oates had dumped a whole studio's worth of analog stuff and the same thing happened when the digital mixers started coming out that had instant recall. That was great for us, because we got the Midas for a really good price… and now it's starting to inch back up in value, as people realize that its characteristics are unique.

**We read that you invented your own sound equipment. Can you give us some insight into that?**

**Lenny:** That was for our live set – we wanted to make custom gear that would help us to set up quickly or make the show run more efficiently, for instance, power banks where all of our gear is plugged into one central spot, or take existing pieces of gear and adapt them to be a lot more fun to work with because we might not like the way a knob or filter sweep is positioned on a particular synth. It's usually quite simple to take something apart and put a Moog knob on it, so it's more fun when you're cranking it up live. Of course, every time you open stuff up you're voiding warranties, so when a piece of gear gets broken on the road it's a great time to crack it open and see what else we can do with it. em

**WANT TO KNOW MORE?**

The new Octave One album *Never On Sunday* is out now on 430 West. For more information, visit **octaveone.com**

#4

# Crafting a bassline

## This month, Dave Clews takes you through bassline programming bass-ics, from both 'real' and synth-based approaches

**> Bass is not only the foundation of a piece of music pitch-wise, but also incredibly important from a rhythmic perspective. A solid bassline locked to an infectious drum groove is the holy grail of dance music, so this month I'll be looking at some of the ingredients that can help transform a basic bassline into a stone cold killer groove.**

There are, of course, many different styles of bass depending on the genre. Also, the type of instrument you're using will have an effect on things – a great synth bassline will have similar elements to an equivalent line played on a bass guitar in terms of rhythm and syncopation, but as it's played on a keyboard rather than a fretboard, the approach to the way it's played and phrased will be slightly different.

This all means that when programming a bass part in your DAW, you'll need to adopt different approaches when working with synth bass or bass guitar samples. There are plenty of aspects that many great basslines have in common though, so this month I'm going to demonstrate how to construct both synth-based and more real-sounding bass parts.

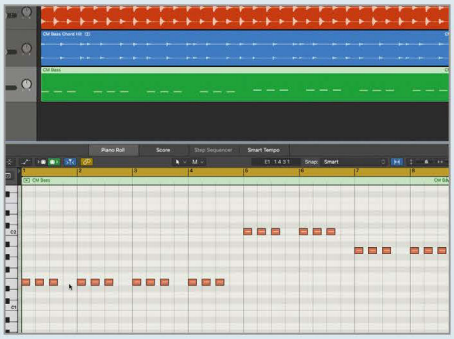
I'll be starting with some basic bass ideas using simple plugin sounds and classic techniques, then moving on to some more advanced techniques using Waves' Bass Fingers virtual bass instrument.

## >Step by step Programming a great bassline

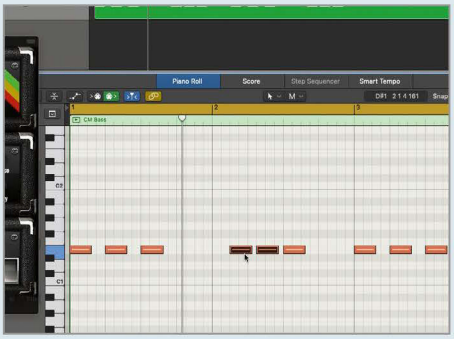
**1 >** If you already have a chord progression, work out what the root note of each chord is, then lock those with the bass on each chord change. This example progression uses four bars of Em chord stabs, two of Cm and two of Am, but watch for inverted chords – these are 1st inversion minor chords, so the root note is the top note in each chord.

**2 >** The bass's relationship with the kick drum is very important. To illustrate, we've got a typical four-to-the-floor, house-style pattern going here. I'll start by simply placing a root note for each chord on each kick drum beat, a classic technique beloved of a certain French disco/funk outfit (Daft Punk).

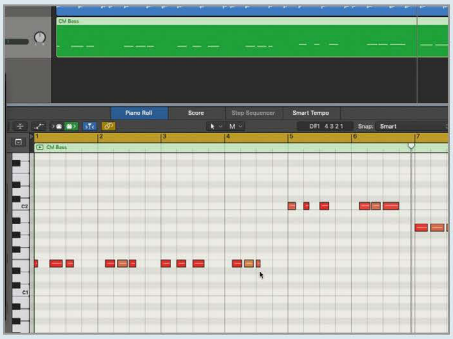
**3 >** Incidentally, if we were to shift the whole thing to the right onto the offbeats between the kicks, we'd have the classic trance bassline. This would normally be handled by an FM or PCM synth organ sound – traditionally from a Yamaha TX81Z or Korg M1 – but I've used a plugin emulation.



**4 >** The first beat of the bar is called the downbeat, and reinforcing this with a bass note is always a good place to start. So for our next step, let's switch back to our original four-to-the-floor timing and create some space by removing the fourth note of each bar, leaving bass notes on beats two and three, coinciding directly with the first three kick drum beats.



**5 >** Not very groovy yet, so let's try a bit of syncopation with our bassline. This is a term for when the rhythm of what you're playing goes around and in between the beats you're playing over. So, in every second bar, I'm going to move the first two notes off the beat but leave the third where it is. This results in a sort of 'French Touch'-style bass part.

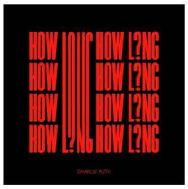


**6 >** If we vary the note lengths, we get very different results, since when it comes to making you pull a bass face, the gaps between the notes – ie what you don't play – can be just as important as the notes themselves. To illustrate, here I've programmed notes of varying lengths, and it sounds very uneven and grooves like a wet fish.

## PRO TIPS

**SOUNDS IMPORTANT**

When programming a bassline, the sound you use is nearly always just as important as the part itself. For example, take Double 99's iconic UK garage banger *Ripgroove*. This uses a bouncy, heavy electronic bass with a pronounced filter envelope to give the sound that immediately recognizable and genre-defining 'woip' character, but the actual bass part is just simple root notes played in a quarter-note rhythm in sync with the kick drum. Simple, but incredibly effective due to the undeniable character of that sound. And where would drum 'n' bass be without the Reese bass holding down its signature long, modulated notes?

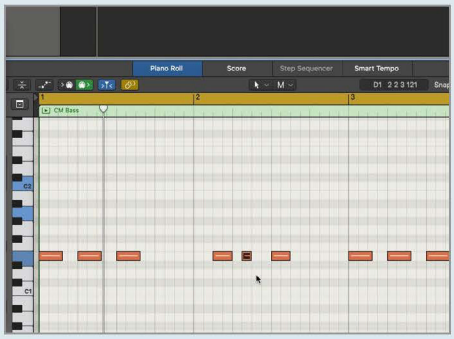



**COMBINATION LOCK**

Sometimes a great bassline can be made up of a combination of multiple elements – for instance *Red Alert* by Basement Jaxx combines an earworm of a sampled slap bass riff with an answering squelchy synth bass that hits on the downbeat of the chord change each time. What's remarkable is the amount of space between the phrases, which leaves room for the very occasional flashy fill-in riff on yet another bass synth sound. Another example is Charlie Puth's *How Long* which uses a sampled bass guitar, complete with slides, for the stripped down section, backed up with a weighty analog synth bass on the downbeats when things pick up.

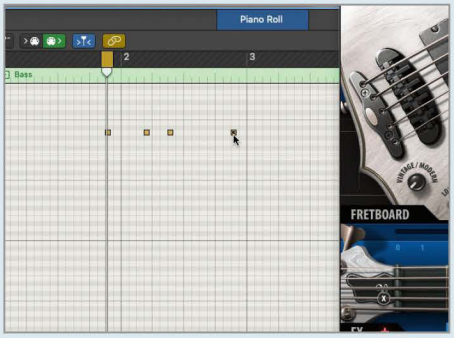
## Dave Clews

**In a studio career spanning more than 25 years, Dave has engineered, programmed and played keyboards on records for a string of artists including George Michael, Kylie Minogue, Tina Turner and Estelle. These days, he writes articles for cm and other magazines and websites, and is the author of Avid Pro Tools Basics. Follow him on instagram @electricdave67**

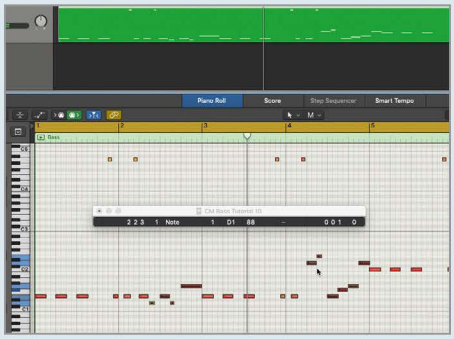



**7** > Now here's the same part again, but with all the notes trimmed to proper lengths, about an eighth-note duration for our first three notes. Every second set of three notes now features an eighth-note either side, with a 16th-note in the middle, for a much tighter result. This shows the importance of note duration when programming a bassline.

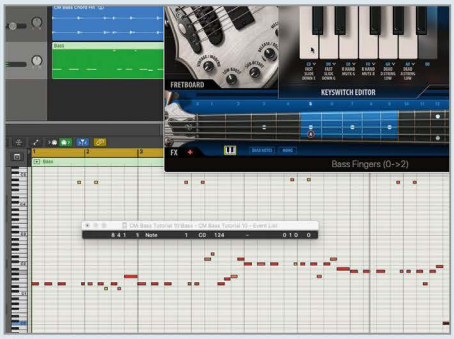
**8** > Let's switch to a sampled bass guitar. 'Dead' notes are tiny, muted extra notes that a bass player plays by hitting a string and dampening the note on the fretboard, injecting extra rhythmic feel into the part. If your instrument doesn't feature dedicated dead note samples, you can just try programming really short, quiet copies of the regular notes.



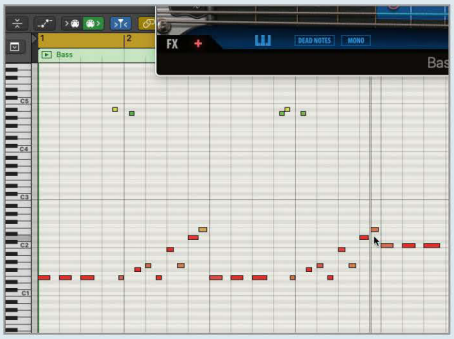

**9** > Here I'm using a Waves Bass Fingers preset that allows you to enter notes high up on the keyboard that trigger dead notes for each string. Adjusting the placement and velocity of these – they're muted notes, so should be felt rather than heard – can produce some very real-sounding results.



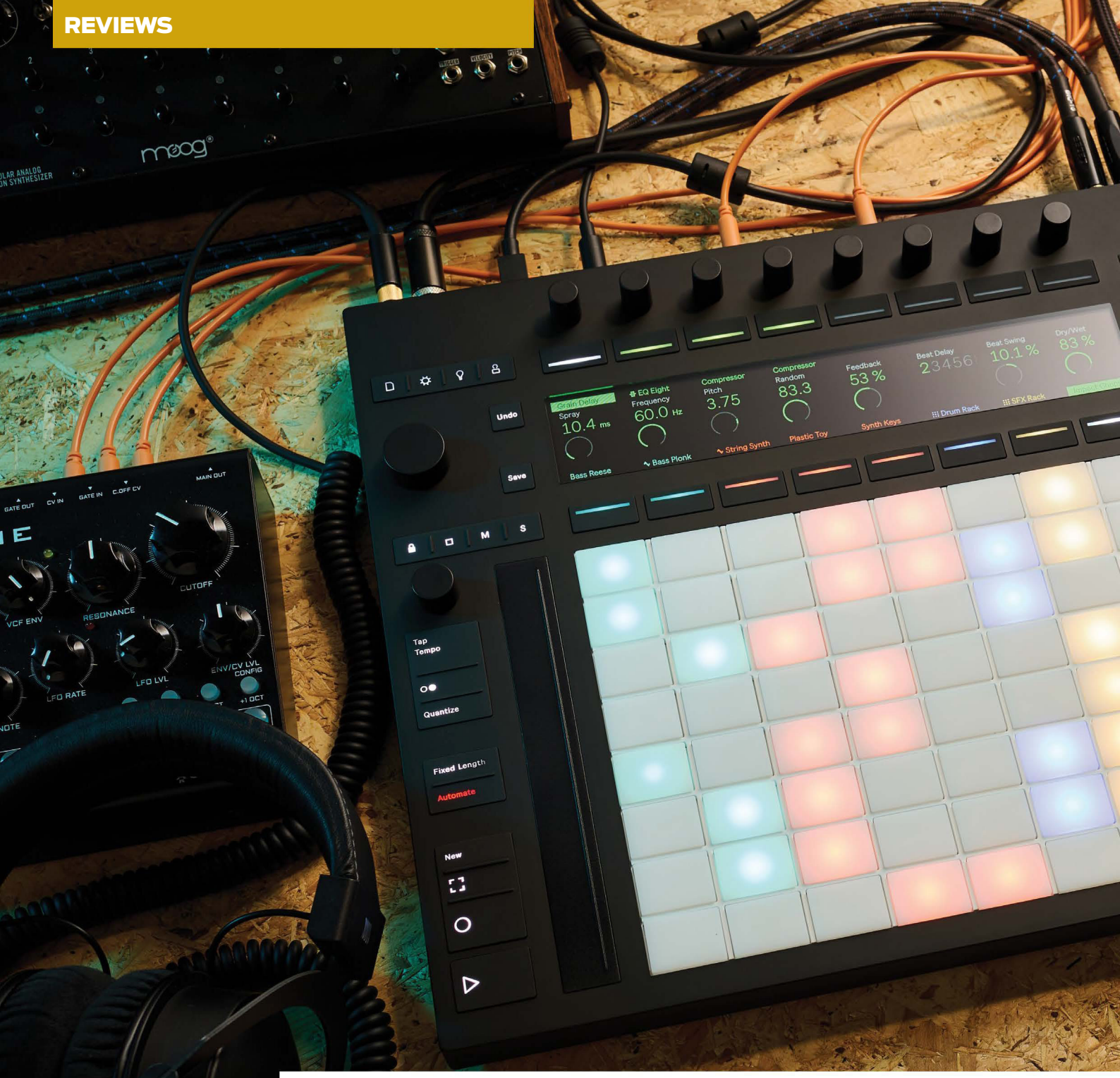

**10** > If you know your song's key, its parent scale will tell you the best notes to use for fill-in notes to fit between the root notes in every second bar. If you check the first chord in your progression, this often tells you the key – if your first chord is E minor, chances are it's the key of E minor, so here I've used notes from the E minor scale as fill-ins over the Em chord.




**11** > This hits a snag when we get to the Cm chord, as Cm isn't diatonic to the key of E minor, so instead I use notes from the C minor scale over this chord. However, Am is diatonic to E minor, so I can swap back to notes from the E minor scale on the last chord. As a final flourish, I've chucked in a fast downward slide on the final quarter-note beat of bar 4.




**12** > Finally, on a disco tip, Chic's Bernard Edwards was the disco bass king, so the classic disco sound always sounds best played using a sample of a real bass. A classic Edwards-inspired line uses lots of scale runs, dead notes and jumps from the seventh to the octave of the root. I've also paid a little homage to Pino Palladino, another great, in the final bar...em




# Ableton Push from $999

Ableton's controller goes fully MPE and throws off the shackles of Live itself. By Si Truss

**KEY FEATURES** **I/O:** 2x input jacks, 2x main output jacks, headphones out, ADAT in and out (up-to 10-in/10-out), USB-C, USB, MIDI in and out (via adapter), 2x pedal/CV ports. **PRICING:** Push controller **$999**, Push standalone **$1,999**. Upgrade kit (available in late 2023) **$1,049**

## THE PROS & CONS

**+**

MPE pads are responsive, versatile and very easy to use

**Workflow is tight and intuitive in either controller or standalone mode**

Slick continuity between standalone and desktop

**–**

**Transfer of sample/ Drum Rack presets is a little clunky**

Browsing audio loops could be slicker

**Only bundling Live Intro feels a little on the cheap side**

Ever since version 1 arrived in 2013, Ableton has been calling its Push hardware an 'instrument'. In the past this has always felt rather hyperbolic – Push 1 and 2 were both great in their own way, but beyond Ableton's own marketing department nobody seriously considered either to be anything other than a MIDI interface for Live. The latest version, however, might actually warrant that categorization.

This third generation – known simply as Push, as Ableton is ditching the numbered naming – boasts numerous design tweaks and new features, but two aspects stand out. The first is an overhauled pad grid, which adds multidimensional polyphonic expression to the controller (aka MPE) for a considerably more versatile and expressive playing experience. The second is the fact that Push is now available in both controller and standalone configurations, with the latter featuring a CPU that can run Live within the Push hardware, entirely independent of a computer.

We'll return to these aspects, but let's get the smaller stuff out of the way first. Design-wise, the hardware isn't a huge departure from that of Push 2. The unit is roughly the same size, if unsurprisingly heavier, and the overall look and layout is familiar. The most significant changes to the hardware can be found on the rear edge, where a substantially increased array of ins and outs take advantage of the newly added audio interface capabilities [see *Plug and Play*].

Control-wise, the most noticeable addition is a sizeable jog wheel to the top right of the interface, which doubles up as a directional switch. This speeds up the process of browsing, triggering and moving between devices, and can be used in conjunction with the directional buttons below it.

Broadly speaking, the Push workflow has changed little from that of version 2, which is a good thing; existing users should settle right in, even though some controls have moved slightly and others have been renamed or replaced. As before, the central grid can be used to trigger clips, step sequence and play instruments using a variety of scale modes, while the buttons and touch-sensitive rotaries that surround the screen let users add, edit and perform with Live's devices and – in controller mode – third party plugins.

The most significant workflow change is that Push can now trigger clips and scenes using the screen and navigational controls as well as with the pad grid. This means that Push can be far more flexible when it comes to both playing an instrument and triggering clips simultaneously, meaning you don't need to sacrifice those new expressive pads when using Push for a performance or jam.

Version 3 also enhances the MIDI editing capabilities when using the hardware, with a new Clip Edit mode that displays notes on the screen in more detail, and allows more precise adjustments using the jog wheel.

As a controller, those pads are Push's headline feature, and they deliver on their promise of expressivity. The 'multidimensional' nature means several additional levels of sensitivity next to Push 2, all of which is registered on a per-note basis. Along with note-on and velocity, the pad's grid responds to polyphonic aftertouch as well as movement across the X and Y axis of each individual pad. Ableton recently revamped many of Live's devices to respond to MPE, so there are a lot of stock presets ready to make use of these expressions. In most instrument cases, X-axis movement controls pitch bend for each note, while Y adjusts mod wheel-like parameters such as filter cutoff or noise level.

None of this is exactly unique to Push. MPE has been widely popularized in recent years by gear like Roli's Seaboard range, and we've

## THE ALTERNATIVES

### Akai MPC Live II
$1,111

The MPC Live offers a similarly unshackled experience at a much lower price. Push's Live-based workflow is slicker and tighter though

akaipro.com

### NI Maschine+
$1,234

The standalone version of Maschine comes equipped with NI's slick beatmaking software as well as several classic – if a little dated – synths including Massive and Monark

native-instruments.com

### Novation Launchpad Pro
$370

For a pad-based, Live-ready controller without the bells and whistles of an interface, CPU or MPE, Novation's Launchpad Pro is a great choice

novation.com

seen similar pad-style implementation on instruments such as Polyend Medusa and Roger Linn's Linnstrument. If anything, Ableton is playing catch-up on the MPE front. That said, Push makes MPE control incredibly easy and accessible, and the functionality works brilliantly with Push's already intuitive system of scales. It effectively turns Push into an expressive playing surface with no wrong answers, meaning even the most musically illiterate producer can create expressive music without hitting too many bum notes (my six-year-old son is enthralled by it).

If that makes Push sound a little toy-like, fear not; there are plenty of customization options allowing users to adjust the responsive behavior of the pads as well as route MPE messages to different parameters. For those willing to invest the time to get to know it, you really can play Push like a genuine instrument.

Possibly more interesting than the synth presets are the MPE-ready drum possibilities, which could use the extra directions of expression to be both more realistic – in the cases of acoustic kits – and creative, using the X and Y axis to change things like pitch, filtering and effects. Again, since Push has access to Live's full feature set, users can create and customize their own MPE-format kits and use expressions as they see fit.

## Going solo

Undoubtedly the biggest talking point for this new Push, however, is its standalone mode. Push now comes in two configurations: a controller version, which includes the interface and full range of ins and outs but requires connection to a computer with Live installed to operate, and a standalone version, which adds an onboard CPU and battery, so it can run Live within the hardware without needing either a computer or power source. In this mode, Push runs Live on a custom Linux OS. The unit, as shipped, uses an Intel i3 processor with 8GB RAM and a 256GB hard drive. Interestingly, Ableton has made Push upgradable, meaning that these specs could potentially be changed in the future by replacing various elements – which should future-proof Push in the long term. Ableton are also releasing official upgrade kits later in 2023, which will allow users to convert a tethered controller version of Push into a standalone one.

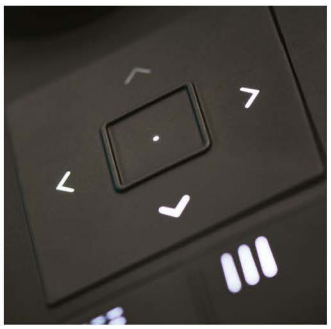
Battery life is around two hours. Not much to write home about, but enough for some fun on-the-go creativity. The real bonus is for live performance, as it means Push won't cut out if your power lead is accidentally disconnected mid-set.

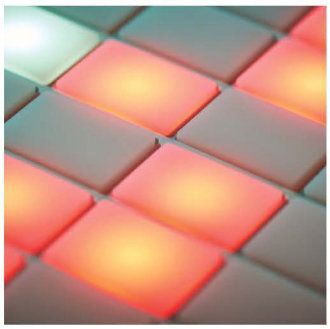
Used standalone, Push really does offer the full Ableton Live experience away from a computer. Every native device – including all instruments,

### PLUG AND PLAY

Both variations of Push come equipped with a fresh array of I/O to make use of the new interface. There are two pre-amp-equipped jack inputs, two main outputs, and two more assignable monitor/headphone outs. In a nice touch though, Push also includes ADAT in and out ports, allowing expansion up to 10 ins and 12 outs (meaning you could theoretically track a small band session with Push standalone). There are MIDI in and out ports, although both are mini-jack ports and – in line with a disappointing trend among manufacturers – adapters aren't included. There are two USB ports, one USB-C for tethered use and an additional USB for connecting a MIDI controller. Finally, the pedal inputs from Push 2 remain here, but they also double up as stereo CV outputs, allowing Push to output up to four CV signals with the use of a stereo splitter.

> Undoubtedly the biggest talking point for Push is its standalone mode





audio and MIDI effects – can be used within Push, the only restriction being that there's no capability to use third-party plugins. You can add Max for Live devices too, although compatibility varies depending on whether they have been formatted with Push in mind. The vast majority of Live's features and tools are available too, including audio recording, sampling, warping, editing and audio-to-MIDI. Effectively, if you can do it with the Push controller, it can be done standalone too.

The one significant area of Live that can't be accessed in this mode is the timeline-based Arrangement view. Some might see this as an omission, but I'd argue that by keeping the focus on the clip/scene-based Session view, Ableton manages to keep Push's workflow from getting too convoluted.

Ableton puts no hard limits on how many tracks can be added in standalone. We managed to run around 40 instances of Wavetable before maxing out the CPU, and in a separate set we ran a similar number of Drift devices. We managed to add 35 tracks of audio loops, each with a Hybrid Reverb. It should be said, however, that Push became sluggish to use well before hitting that limit. For comparison, those track counts are a little over half of what I can run using my M1 MacBook Pro.

The real bonus lies in what Ableton calls 'continuity', which is how easy it is to transfer projects between standalone and desktop. Push comes with Wi-Fi, which is used to authorize the standalone version and allows users to download Packs from their Ableton account. When connected to the same network as a computer, Push will appear in Live's browser on desktop, allowing users to seamlessly transfer Sets, samples and presets bi-directionally. Obviously, the lack of third-party plugins on the hardware causes some compatibility issues, but by freezing any tracks using these devices and using 'Collect all and save', Push will import any frozen tracks as audio clips.

There's one area where this seamless transfer breaks down, which is with Drum Racks and sample-based presets. If you create a user preset using your own samples, Live doesn't bundle these with the preset, so transferring it to Push will leave you with a Simpler or Rack full of missing samples to reassign. There are workarounds, but a 'collect and save' option for user presets would be useful. Also, weirdly, as of now, Push's browser doesn't work as smoothly for audio loops as it does for Devices, and unless you set up a system of Favorites, you'll be searching through a long, unfiltered list even if your audio is arranged into named folders. I've put both of these issues to Ableton, and am told both are in the process of being addressed.

A slight gripe is that Ableton is only bundling Live Intro with both configurations. Live Intro limits users to a maximum of 16 audio, 16 MIDI and two Return tracks. While this is plenty to be getting on with, it does feel a bit cheap to impose these kinds of artificial restrictions when someone has shelled out $2k for a unit.

Also worth noting is that the non-processor version of Push is significantly more expensive than Push 2. Given the enhanced pads and inclusion of an interface, that doesn't seem unreasonable, but it does leave a gap in the market. After all, it's safe to assume current Push 2 owners already own an interface and might begrudge paying for another. Perhaps Ableton is opening the door to a 'Push Mini' down the line?

All this aside, this new Push is a bit of a revelation. It's undoubtedly the slickest, most refined 'DAW-in-a-box' on the market, and whether used standalone or not, the expressive pads make the 'instrument' claims feel like more than just marketing speak.

Is it worth spending the extra for the standalone configuration? That depends on each producer's workflow. Right now I'd suggest live performers will get the most out of it.

Even in controller mode, Push is excellent, and it's perfectly possible to simply put the tethered laptop to one side and have the same experience for a much cheaper cost. The forthcoming upgrade kits are a very smart move on Ableton's part though, meaning that users hooked on the design will have an easy upgrade route. em

**PADS:** The newly MPE-equipped pads create an expressive playing surface with no wrong answers

**SCREEN:** Clips and scenes can now be launched using the screen as well as the pads, for extra flexibility

**I/O:** The hardware offers two ins and two outs, but this can be expanded using ADAT

**JOG WHEEL:** In control terms, the jog is the most notable addition, significantly speeding up browsing

## VERDICT

**Push finally lives up to Ableton's vision of controller-as-instrument, and standalone mode is a great new way to use Live**

# Adam Audio A8H

## $1,499 each

If you like slightly bigger monitors, a three-way design may be for you.

By Jon Musgrave

**KEY FEATURES** **ONBOARD DSP:** AD converter 24-bit, 96kHz, Horizontal/vertical positioning **FREQ. RESPONSE:** 34Hz–42kHz (-3dB) **MAX. PEAK SPL PER SPEAKER AT 1M:** 105dB SPL **CROSSOVERS:** 400Hz, 3kHz **WOOFER:** 8" Multi Layer Mineral (MLM) fibre **AMPLIFICATION:** LF 250W peak (Class D), MF 70W peak and HF 20W peak (Class A/B)

# Flexible monitoring that keeps Adam's mojo

Adam Audio's recently revamped A series monitors couple its classic X-ART (Extended Accelerated Rhythm Technology) tweeters with a new glass fiber HPS tweeter waveguide, newly developed MLM woofers, onboard DSP and Sonarworks integration in order to deliver a highly flexible monitoring solution that retains Adam's classic mojo.

Up for review is the flagship three-way front-ported A8H. By default it's a horizontal configuration monitor and the cabinet design and layout means it comes in specific left and right versions. However, much like other Adam monitors, the tweeters can be unscrewed and rotated through 90 degrees to position them vertically. At 38cm wide and over 13kg these are biggish monitors. Most controls and connections are round the back. XLR or RCA inputs are joined by an Ethernet socket for remote monitor control. Back panel options include level (+/- 12dB), 4-band room adaptation and three voicing positions. The selectors have green LEDs for all button positions, so you can see settings at a glance.

In terms of onboard EQ (room adaptation) you have four choices – bass, desk, presence and treble – each offering various cut or boost settings at their specific fixed frequencies. In my medium-sized control room I cut the bass (-2dB) and desk (-2dB) as per the manual's suggestions, but I didn't feel the need to modify anything else. In addition to room adaptation, the A8H includes three 'voicings' which influence the overall sound. The default (Pure) is the most neutral or flat setting, whereas UNR (Uniform Natural Response) is closer to Adam's AX series. To my ears this has more low end and slightly enhanced upper mids. Both options can be used in conjunction with the room adaptation EQ. The third option (External) is used with an Ethernet connection and Adam's A Control software for remote control of settings.

The A Control software replicates all the back panel options and also opens up a more comprehensive 6-band parametric EQ that overrides the other tone settings. With shelf, peak, high and low-pass filter shapes, +6/-20dB gain and 20Hz to 20kHz frequency range, you can adjust the speakers however you like. There's also further overall gain (+12/-60dB) and positive timing delay (up to 5ms). As mentioned, the A8H can apply its own Sonarworks Sound ID reference curve, which was a simple process.

The A8H is a big loud monitor, and when you turn them up those front ports really shift air. Nevertheless, the all-important mid-range is ably handled by the three-way design and as ever the ribbon tweeters deliver a silky smooth top end that's not fatiguing.

They're also great at lower volumes, so if you can accommodate their size, the forward-ported design and excellent tweakability make them a great choice for any space. Despite these being by far the most flexible Adam monitors I've used, I really didn't feel the need to tweak them that much, which no doubt makes them perfect for coupling with Soundworks Sound ID room correction, where more extensive tone shaping is applied.

All told, these monitors are really impressive. em

## VERDICT

**A powerful three-way monitor ideal for larger rooms, but also flexible. Perfect for a variety of production environments**

### THE PROS & CONS

**+**

Loud monitors with powerful low frequency delivery

**Silky smooth top end**

Flexible onboard EQ and voicing options

**Additional features and remote control via A Control software**

Soundworks Sound ID support

**–**

**Large and heavy**

# Røde NT1 5th Generation $327

This long established mic has had a significant upgrade. By Jon Musgrave

**KEY FEATURES** **CAPSULE:** 1" true condenser **PICKUP PATTERN:** Cardioid **FREQ. RANGE:** 20Hz–20kHz **OUTPUT IMPEDANCE:** 100Ω **MAX. SPL:** 142dB SPL **EQUIVALENT NOISE (A-WEIGHTED):** 4dBA **SENSITIVITY:** 25mV @ 94dB SPL (+/- 2dB @1kHz) **POWER:** 48V phantom or 5V USB **CONNECTION:** XLR or USB-C **FINISH:** Black or Grey **INTERFACE:** 48, 96, 192kHz, 24-bit / 32-bit float **ONBOARD PROCESSING:** HPF, compressor, gate, Aphex exciter and Big Bottom

Røde's NT1 is one the most popular affordable large capsule cardioid condensers available and this 5th Generation model is its most innovative yet. The bundle provides everything you need to get started. In addition to the mic, you get a suspension cradle with integrated pop shield holder, a pop shield, storage bag, 7m XLR cable and a three-metre USB-C to USB-C cable. That last aspect is significant, as the NT1 now incorporates USB interfacing, so you can connect it to your computer without an additional audio interface. The mic uses the same 1" gold sputtered HF6 capsule as its predecessor, although powering is now 48V (not 24 or 48V) or 5V via the new USB connection. Output sensitivity (25mV/Pa) is lower than before, while self noise is slightly improved (4dB A-weighted).

The integrated USB interfacing uses a cleverly designed dual-connect XLR/USB-C socket which is much slicker than a body-side USB socket. There are no on-body controls, but the mic is plug-and-play so applying gain to the onboard Revolution preamp may be available directly in your DAW. To access NT1's further features, you install Røde Central (Mac, PC, iOS, Android). Gain (0-60dB) is joined by Aphex-powered effects including a high-pass filter (75 or 150Hz), compressor, noise gate, Aural Exciter and Big Bottom. The A/D interface delivers impressive specs, with high sample rates (48, 96 and 192kHz) coupled with 24-bit and 32-bit float functionality. This means that if your DAW can record audio at 32-bit float, and assuming you don't exceed the capsule's maximum SPL, audio won't clip.

> If a product reaches fifth generation the maker is doing something right

As you'd expect from Røde, build quality is excellent, and although slightly lighter than the previous version, the Aussie-built mic sports the classic NT1 shape and capsule grille. The cradle with integrated pop shield mount and shield is very handy, and the shield itself is a decent two layer design. One slight frustration is that the shield can only sit opposite the mic stand elbow and not to the side. I found the USB interfacing worked seamlessly and, once set up for 32-bit use, I was able to clip the recording and then use the file gain in my DAW to restore the unclipped waveform. Alas, another downside is that 32-bit mode disables all the onboard processing. There's also no 44.1kHz option and no minimal latency monitoring.

The NT1 delivers a reasonably neutral response with a slight lift in upper frequencies. There's a noticeable proximity from about 10cm, and the mic handles plosives very well beyond about 20cm. The polar pattern isn't too tight and rear rejection quite good.

Sonically, it's not the most exciting mic but it's neutral enough for a variety of applications and, as noted, it's very quiet.

If a product reaches its fifth generation the manufacturer is clearly doing something very right. Carry on, Røde. em

## VERDICT

**With integrated USB interfacing, 32-bit float support and impressive noise figures, this is an excellent budget choice**

### THE PROS & CONS

**+**

Box includes everything you need to get started

**Integrated USB interface with 32-bit float option**

Clever dual-purpose XLR/USB connector

**Very low self noise**

**–**

Integrated USB interface doesn't support 44.1kHz sample rate

**Integrated USB interface has no minimal latency monitoring facility**

# Roland FP-E50

## $999

Is it a piano, a synth, an arranger or something else? Meet the Roland keyboard that wants to do it all **By Ben Rogerson**

**KEY FEATURES** Roland digital piano with ZEN-Core sounds, interactive accompaniments, vocal effects, Bluetooth audio/MIDI support, onboard recording, computer connectivity, and expansion options via Roland Cloud

## THE PROS & CONS

**+**

Very playable

**…With the added bonus of a wide selection of ZEN-Core synth sounds**

The auto-accompaniment features are great fun

**–**

**You can add more sounds and styles, but not the Model Expansion synth emulations**

Should we really need to be using a flash drive to install content in 2023?

Increasingly, manufacturers are blurring the boundaries between home keyboards, synths, digital pianos, stage pianos, arrangers and workstations, resulting in some interesting hybrids.Roland's FP-E50 is a case in point. On first inspection, it looks like a home digital piano but then you spot the pitch and mod wheels on the left and start to wonder. There are a few more buttons and sliders than you'd expect to find on a living room keyboard, as well.

And that's because, while the Roland FP-E50 can happily function as a home digital piano – it has a PHA-4 keybed (with Escapement and Ivory Feel, we might add), Roland's SuperNATURAL Piano engine, built-in speakers and the obligatory music stand – it can do a few other things, too.

Take automatic accompaniment, for example. There are 177 preset styles that cover all of the expected genres, and you get handy features such as sync start, variations and intros/endings. There's also an interactive function; fire this up and the FP-E50 will 'listen' to how you're playing and adjust the backing track to suit.

Then there's the chord sequencer. This includes 140 preset patterns for you to jam over, and space to store 256 of your own progressions. A simple recorder enables you to capture your playing.

The FP-E50 goes above and beyond with its additional sounds, too. Roland's latest ZEN-Core engine is in play (the same one that's used in the company's high-end synths) and, as well as the expected acoustic and electric pianos, strings, organs and pads, you also get a multitude of synth tones and drum sets.

Things are starting to get interesting, then, and if you're deducing that the FP-E50 has a strong performance angle then you'd be right. In fact, it even has a mic input for singing, along with auto harmony, voice transformer, vocal designer, compressor and noise suppressor effects.

You might also want to play along with tracks from your phone, in

## THE ALTERNATIVES

**Korg XE20** $950

Like the FP-E50, the XE20 is a digital piano with auto-accompaniment features. You get a total of 705 sounds (including two grand piano variants) and 41 drum kits, and bonus styles can be downloaded, too

korg.com

**Casio PX-S3100** $1,038

A super-svelte and portable digital piano that has the advantage of being battery-powerable. Again, there are auto-accompaniment features, while the upgraded speakers and Bluetooth audio/MIDI support keep things current

casio.co.uk

**LEVEL SLIDERS** Easy access controls to adjust the levels of your keyboard playing, auto-accompaniment, external audio and mic input. Oh, and the master volume, obviously

**SOUND SELECTION BUTTONS** Quick-access buttons that switch you instantly between categories. You can turn the ambience on/off and engage split/dual and transpose modes too

**DISPLAY AND CONTROL BUTTONS** The simple screen shows you the selected scene, sound and accompaniment details. Long presses offer quick access to certain features

**KEYBOARD** It's not Roland's premium keyboard, but the PHA-4 keybed that's included here gives a pianistic feel and offers users plenty of scope for expression

which case you can make use of the Bluetooth audio functionality (wireless MIDI is here, too) or plug in via the mini-jack input. There's also USB MIDI/audio, 1/4-inch output for hooking up to a larger speaker system, dual headphone jacks (one big, one small) and pedal inputs (a DP-2 damper pedal is included).

There's a lot about the PF-E50 that feels familiar, and that's no bad thing. The SuperNATURAL piano engine sounds as good as ever here, and the PHA-4 keyboard does a pretty good job of offering a piano-like feel. One or two of the notes on our review model did have a slightly more audible 'click' noise than others, but not to the point that it was off-putting.

This action might feel heavy at first if you're graduating from a home keyboard but stick with it and let it loosen up. You'll be rewarded with a fine playing experience that allows for plenty of expression, even if it's not quite on a par with the PHA-50 keybed that you'll find in Roland's more expensive pianos.

You can also tweak the sound of your piano in the designer section, adjusting the likes of lid position and string, damper, key off and cabinet resonance. Many players won't touch this, but it's there if you need it.

The FP-E50's two 11-watt speakers are downward-facing which, again, might take a bit of getting used to if you're used to top-mounted ones. They're plenty loud enough, if a little boomy if you crank them up.

In general, though, the more time you spend with this instrument, the more you find to like about it. The wealth and quality of sounds on offer is hugely impressive, and you can lose hours as you start layering them up or splitting the keyboard so that you can play one with your left hand and another with your right. It's possible to add more, too, via the Roland Cloud (check out the boxout for more details).

Perhaps the biggest revelation (for us, anyway) are the auto-accompaniment features. Some will consider them deeply unfashionable, but for solo jamming, they're lots of fun. The presets and multiple chord detection modes make this performance element of the PF-E50 highly configurable.

The interactive option certainly adds something, to boot. At times, it really does feel like you're playing with a responsive group of musicians, though it doesn't always take the backing quite where you want it. As with any band, you have to learn the idiosyncrasies and work with them.

The workflow is genuinely beginner-friendly. It feels like you can get into the FP-E50's features at your own pace, and the control panel makes total sense.

This is an entertainment keyboard in every sense of the word, worth a look. EM

### EXPANSION POTENTIAL

The FP-E50 is among a select but growing number of Roland instruments that let you add more ZEN-Core sounds via the Roland Cloud. Installation isn't a seamless process (it involves purchasing lifetime keys and flash drives) but offers decent content. This includes Roland's trusty old EZX Expansions and plenty of genre-themed ZEN-Core sound packs.

Roland has also confirmed the availability of new Z-style auto-accompaniment packs. These are free, and give you many more backings to work with. As with those that ship with the FP-E50, they sound great.

## VERDICT

**Maybe not the coolest keyboard in Roland's roster, but if you value sound quality, ease-of-use and fun, it's in a class of its own**

# Noise Engineering Quantus Trajecta $333

Noise Engineering's new envelope generator looks like an essential module. By Rob Redman

**CONTACT** **WEB:** noiseengineering.us **KEY FEATURES** Four channels of envelope, three envelope modes, rig-friendly 10hp

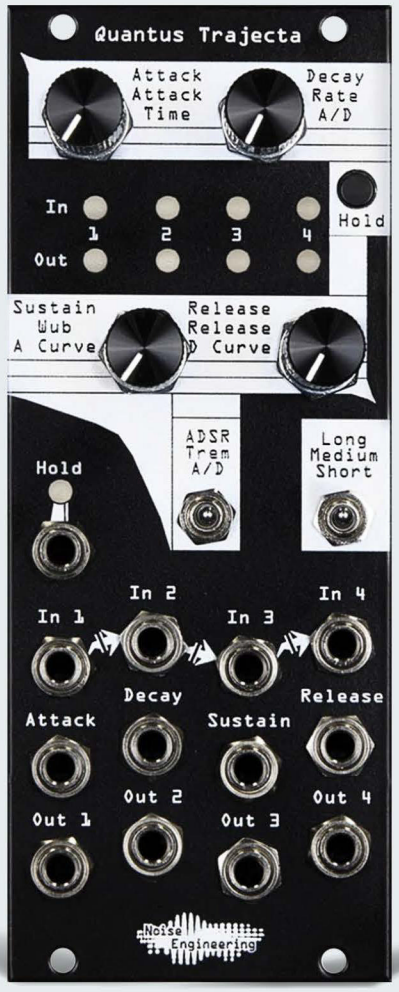
Noise Engineering have quite the array of modules these days, but always seem to find new ways of working and performing. Quantus Trajecta is no different and, although many envelope generators exist, they have found a wonderfully fun and playable way to produce and control envelopes.

The 10hp, 23mm-deep module is small enough to fit most rigs but capable enough to suit the largest, as it's polyphonic in nature, with four channels of output. Build quality is excellent, as is to be expected. Noise Engineering don't mess around and all their modules feel built for a touring musician.

What makes Quantus Trajecta special is not simply its polyphonic output but its playability. You could use it to provide envelopes for a polyphonic setup for sure, and it excels at that. The four channels are normalled, so keeping everything in sync is child's play. You could be more experimental, however, and send envelopes to different places, and better yet, Quantus Trajecta is fully CV controllable, so patch in a gate/trigger sequencer or a clock divider and things become really exciting.

Then there are the envelopes themselves. Quantus Trajecta operates in three modes. First up is a typical ADSR mode, offering a really lovely exponential curve which, especially when driving a polyphonic voice, can produce some very pretty pads. There's an AD mode which feels great for basslines and snappy leads, then the more unusual trem mode. This can do slowly evolving modulation through to almost ratchet-like effects and adds a level of versatility you don't often find on an EG module. All three modes share a toggle switch for setting the speed range which is fine tuned by the A and R knobs.

Lastly, there's the hold button (also CV controllable). A press of this locks the envelope output at its current state, resuming when the button is released. In a live situation this can aid in building tension for a drop, or adding some manual excitement to a track. Quantus Trajecta is a fine tool for performance and studio use. em




## VERDICT

**Quantus Trajecta takes an almost utilitarian module and turns it into something exciting and far more than the sum of its parts**

## THE PROS & CONS

**+**

Intuitive and simple controls

**Easy to keep multiple voices in sync**

Solid, road-worthy build quality

**–**

**Might be tight in the shallowest of skiffs**

# Eve Audio SC2070

## $1,309 each

Looking for some pro monitors? Meet the new two-way design from Eve Audio **By Jon Musgrave**

**KEY FEATURES** **FREE FIELD FREQ RANGE** (-3dB): 38Hz to 25kHz **DRIVERS:** LF 165mm, HF AMT RS7 ribbon **INPUTS:** XLR and RCA **AMPLIFICATION:** Class D 150W (LF) 100W (HF) EQ Controls: high shelf, low shelf, mid peak, desk filter **EQ FREQ:** 3kHz, 300Hz, 1kHz, 170Hz and 80Hz Max SPL: 116dB (per pair) **CROSSOVER:** 1.8kHz Size: 230(w) x 345(h) x 304(d)mm **WEIGHT:** 9.4kg

## THE PROS & CONS

**+**

Big open sound

**Flexible EQ options**

Handy front-mounted Smart-Knob

**Reasonably compact**

**–**

No ¼" TRS input

**Pricey**

Eve Audio produce a range of mid-priced and pro-level studio monitors that retail from about $600 per pair upwards.

The SC2070 is a new two-way addition to their flagship range, which also includes the three-way SC3070 and four-way SC4070. It's a rear-ported design that combines a 6.5" woofer with a new version of their AMT (Air Motion Transformer) ribbon tweeter. At 345mm high, it's compact enough to be a near-field, but with plenty of power under the hood and decent low frequency extension, it could easily handle mid-field or multichannel duties.

Like other SC monitors, the SC2070 includes a multi-function front-mounted Smart-Knob. Round the back are the mains input, three dip switches (see below) and two analog inputs (phono and XLR). Alas, there's no ¼" TRS jack input.

## What a difference an 0 makes

Visually the SC2070 looks a lot like the SC207, but at over twice the price, the SC2070 is a very different proposition. The new purpose-built RS7 tweeter has a much larger diaphragm size (1.5 times the size of other typical Eve tweeters) and with the crossover set quite low (1.8kHz) it handles more of the mid-range. While we're talking tech, the 6.5" woofer uses a low distortion copper cap magnet system and a stiff but light honeycomb cone material for precise, low distortion delivery. Each driver gets its own Class D amp (150W LF, 100W HF) providing plenty of oomph.

## Big sound

Like other Eve monitors and many competitor designs, the SC2070 incorporates onboard AD conversion (24-bit/192kHz BurrBrown) and DSP, which then feeds into the Class D amps. The DSP handles all settings including soft start, EQ and volume, and all are accessed from the Smart Knob. The flexible EQ includes high and low shelves (at 3kHz and 300Hz respectively) and bell-shaped mid band (1kHz). A further desktop filter offers a narrow band cut at 170Hz (for desktop reflections) and a bell-shaped boost at 80Hz, for added punch. All bands offer +3dB gain and either -3 or -5dB cut. The rear dip switches can lock the EQ and volume settings.

As you'd expect, the SC2070 build quality is excellent, and these monitors are also quite hefty for their size (9.4kg each). Sonically, they sound very open, and this has as much to do with the mid-range precision as it does with the higher frequencies. In fact, they were a little too bright so I used a -1dB high shelf cut. Working through various sounds and mixes, the SC2070 delivered a consistently big sound. The bass extension is also very good (-3dB at 38Hz) and they can go pretty loud as well. In terms of imaging, the sweet spot is also quite broad. All pretty promising. One thing I would say is that the mid-range is quite forward, and this is particularly obvious for distorted electric guitars. I'd certainly use the monitor mid-band cut if I was regularly mixing rock tracks.

These are excellent monitors, delivering a big, detailed, revealing sound. Significantly you've also got plenty of tweaking options if you need them. That said, they're clearly quite expensive and at this price the competition is stiff, but they should definitely be on your audition list. em

## VERDICT

**A pro monitor that delivers an impressively big, open sound for its size, with plenty of EQ options to tailor it to your space**

# Image-Line PC MAC FL Studio 21 $99 to $500

FL Studio 21 is not celebrating a birthday, as the previous version did, but is introducing some significant additions. **By Andy Jones**

Image-Line's FL Studio DAW had a naming upgrade with last version 20 that might have confused some users. v20 was actually v13, but changed to 20 to celebrate the DAW's 20th birthday back in 2018. Five years on and the latest version 21 should therefore be called FL Studio 25? But, whatever, the main headline is that the DAW remains a free update, no matter what version you bought into (yes, even for those lucky v1 risk takers back in 1998 when it was called FruityLoops v1.0!). v21 has significant updates to workflow, plus some lovely extra plugins, but let's have an overview first.

The original FruityLoops was all about loop creation and then putting together songs from those, and that more modular way of composing has stayed with the software. FL Studio has always placed the main compositional features within their own environments – mixing, arranging and looping, for example – meaning the overall feel can be more disjointed. Still the core looping side is excellent, intuitive and inspiring – maintaining the 'instant creation' ethos that stems from those early days.

Version 21 has several workflow additions that actually help bring the overall composition targets together; they make it perhaps a little more traditional in terms of DAW structure, but still retain the excellent and unique feel that the many (many) FL fans love.

Some of the additions we discuss are for different versions which we'll specify, but do check our 'Comparing FL Studio Editions' box overleaf or what else you get with each of the four different editions.

## 21 in detail

The first big upgrade is an improved browser that lets you preview samples better. It comes

Overall you can now search more quickly, audition more easily and even buy third-party extras

with an improved search, allowing you to tag favorites, so overall you can search more quickly, audition more easily and even buy extra third party samples and presets in a more straightforward way. This might not sound major but some DAWs still take you out of their environment to try out new sounds, so this feels that bit simpler workflow-wise.

The ability to crossfade and blend individual audio files is another addition that works better in practice than it sounds, largely down to how easy Image-Line has made the processes. You can very quickly add fades and volume changes on individual clips, again not requiring you to jump into another window as with some DAWs.

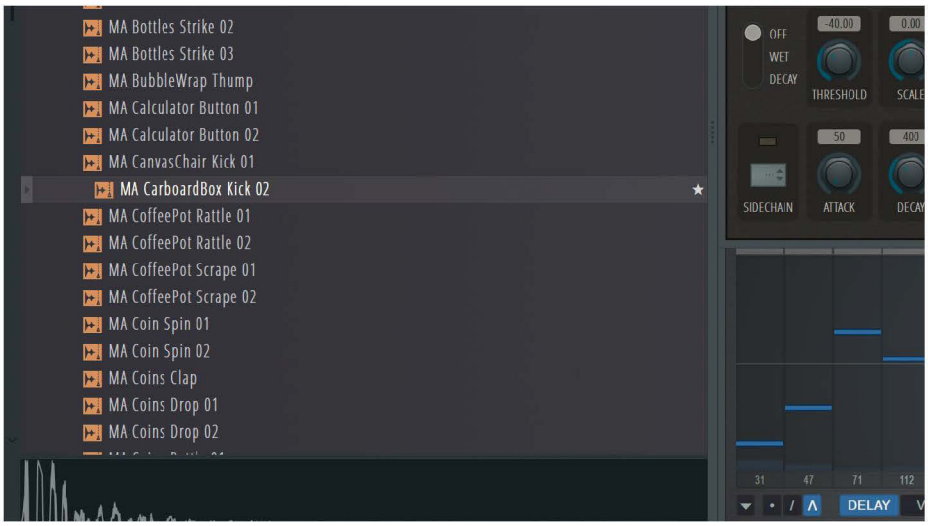
New plugins include Multiband Delay (in Producer Edition upwards) that splits delays across bandwidth with ease. LuxeVERB is a beautiful reverb with a visualizer to help add envelopes to your reverb for a variety of effects ('80s snare for example). It's only with the All Plugins edition but it will make you consider the upgrade. Vintage Phaser (Signature upwards) is modeled on a 1970s guitar pedal, so delivers everything from disco wah to synth Jarre. And VFX Sequencer is a great plugin to get your filtered arpeggiations going. Other existing plugins have also had some significant facelifts.

## Ever fruitful

While the plugin enhancements are great, they are not included in every version so it feels a little over the top to base all of our concluding thoughts on them. And, really, a lot of v21 is about the workflow improvements. You even get big options to adjust the screen color and project hue which could aid your workflow more (although the white version is not really for us).

And on that score it's a fine update: slicker, more refined and easier to use. FL Studio remains one of the most widely used DAWs for very good reason and with its free upgrades, it's a DAW switch you could make for life. EM

Web www.image-line.com




**The browser now lets you audition sounds with ease and you can tag your favorites for easy retrieval later**

**We had the All Plugins version of FL Studio 21 in for our test so got the incredible LuxeVERB, but we're not convinced it's quite worth the price hike. The Producer Edition is a great option**

## Comparing FL Studio editions

**Like most DAWs, there are different levels that you can buy into when it comes to FL Studio. The headlines are that the cheapest Fruity edition delivers a lot of instruments and effects – some 84 of the total of 111 – but has no audio recording. It's a significant omission but, at just $100, it's a decently-priced intro. The Producer version adds this audio recording, a couple of editors and seven plugins. We can see why it's said to be the 'most popular' version, as it delivers a great balance of everything for the cash. The Signature edition adds a video player, extra Newtone audio editor and eight plugins for a not insignificant $315. Finally, top of the pile is the All Plugins edition which has all 111 plugins. You're paying a lot extra for these – over $185 – but they're some of the best titles, including the Drumaxx, Toxic Biohazard and Morphine instruments and marvelous LuxeVERB reverb.**

**We'd probably still opt for the Producer option though.**

## Alternatively

**Ableton Live 11**
A solid update to another DAW that has been with us for a surprising length of time. Similar loop ethos

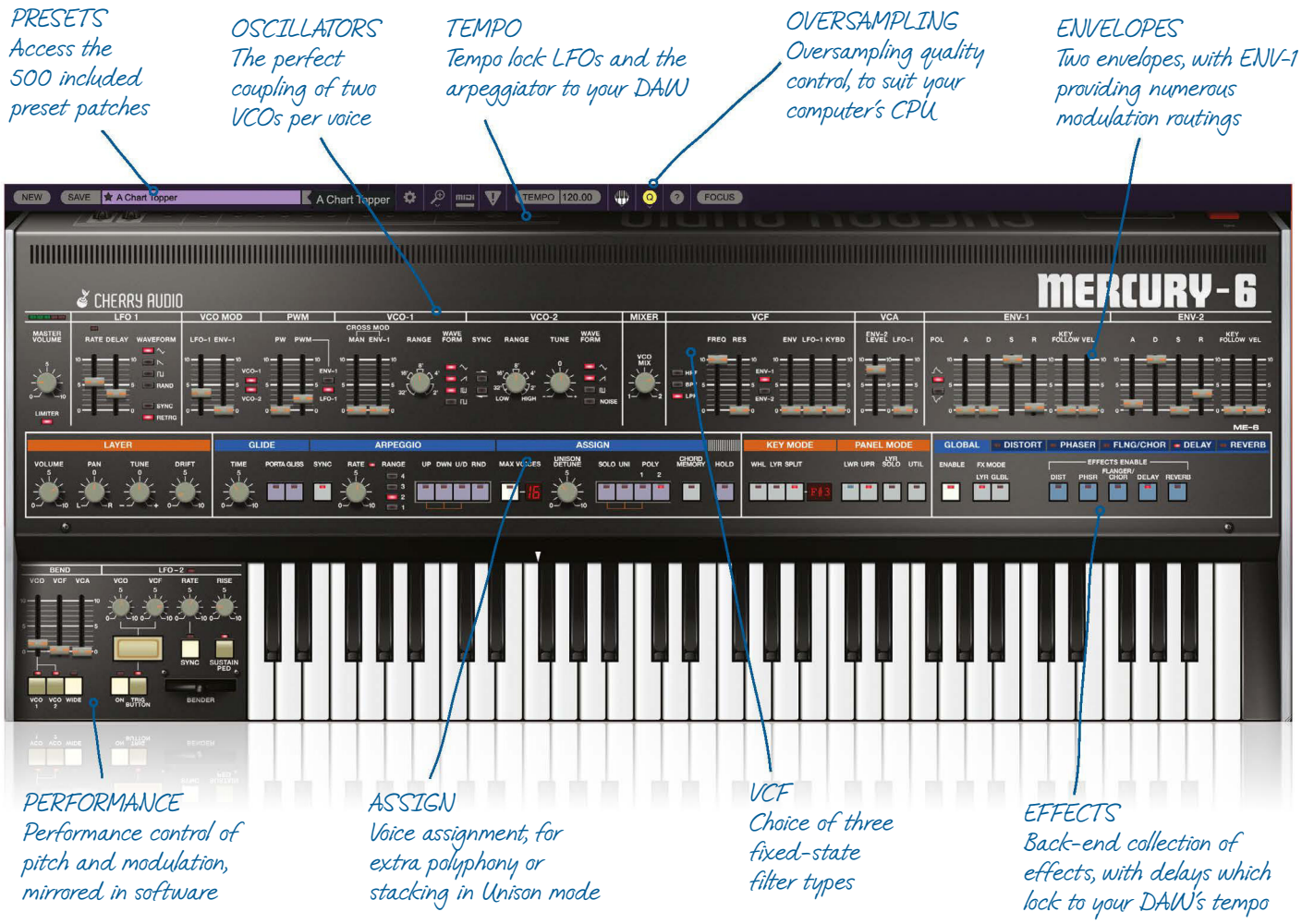
**Reason Studios Reason 12**
The DAW and plugin still acts like a rack but has an easy and fast workflow like FL Studio

## VERDICT

For Great workflow improvements
UI theme change options
Varied buying editions
New plugins are great

Against ...But not all of them ship with every version

FL Studio 21 is a slick update to one of our most established DAWs and with that lifetime of free updates, it should be a new platform for you to consider




# Cherry Audio
# Mercury-6

$69 PC MAC

Cherry's latest synth arrives from the orbit of Mercury, with vintage stimulus from one of the biggest gas giants. **By Dave Gale**

> Barely a month passes without the resurrection of another classic synthesizer in plugin form, but as we know very well, some provide more accurate sonic interpretations than others. Although, surprisingly enough, there are still some vintage classics which remain relatively untouched.

## The 6-voice classic

The Roland Jupiter-6 is one such synth, reconstructed here in the guise of the Mercury-6. As with all of Cherry Audio's classic recreations, the attention to detail and styling is exemplary, with an inviting interface which is incredibly exacting, but with a few added extras, bringing the ol' Jupe into the computer age.

One benefit of modern technology is that this Mercury is capable of 16-note polyphony. You can set your voice count from 2 to 16, with the ability to compile and detune voices in Unison mode, which makes for the most colossal sound, as 32 oscillators pile on top of each other. It's a far cry from the limited six voices and 12 oscillators of the original.

We wanted to put the Mercury-6 through its paces, so we lined the new pretender up alongside an original Jupiter-6 from the late '80s, and ran some tests.

## Exacting standards

Beginning with the tone of the oscillators, these were absolutely identical across all waves. The only subtle difference appeared to be a slightly brighter tone in the upper harmonics of each wave, caused by the wide open low-pass filter. This is pretty de rigueur for digital facsimiles of the old classics, partly due to the modern pitch of software, but could also be down to ageing circuitry in an '80s synth. Either way, the filter

The actual sound is mightily impressive, demonstrating an undeniable original spirit

performed admirably too, across 24dB low and hi-pass modes, and the crunchier 12dB band-pass mode. Cutoff fader positioning was not entirely identical, but the actual sound remains mightily impressive, demonstrating an undeniable original spirit.

These exacting tendencies even extend to the envelope phases, where the timings of the attack, decay and release phases were beautifully mirrored at around the 18/20 second mark. Despite these lengthy timings, there's a feel of the exponential in the software faders, making it easy to dial in the required phase timings, especially when it comes to the snappier end of business.

## Interfacing

Cherry Audio always supply a standalone mode, which means that you can easily get lost in the synth, with no distractions provided by the DAW. The onboard arpeggiator adds plenty to the charm, with a healthy contingent of back-end effects providing standalone character. You can choose from distortion, phaser, flanger/chorus, delay or reverb, making it ideal for live use, if you like to take your laptop out on maneuvers.

Talking of laptops, the interface could easily fill your screen, and while parameter access is very easy indeed, Cherry Audio has included the brilliant Focus Mode. This immediately zooms into a specific area of the panel, zooming out again, with a second click. It's such a simple idea, and we kind of wish that it was standard on all plugin synths.

## Quality costs

As a production-ready plugin, Cherry Audio has done a sterling job; the installation download includes 500 desirable presets, which will have you up and running in no time. However, we really enjoy the speed of initialization and creation which is available with this plugin, and with an interface that is this inviting, it's hard to resist. If you are running a slightly older machine, the oversampling mode can reduce CPU loading. Scaled between 1 and 4, the highest quality is exceptional, with only a subtle loss in fidelity if lowered. Regardless, this is one of the best vintage reissues we've ever seen in software, at a great price to boot. em

Web www.cherryaudio.com

Get in close to fine-tune those dials and knobs, thanks to the Focus mode

Among the bigger features, Cherry Audio haven't neglected to also emulate the original's ease of use

## Drops of Jupiter

**The Jupiter-6 is one of the classic synths of its age, and has often been overlooked. Perhaps because it came some years after its bigger brother, the Jupiter-8, adopting a build quality which wasn't quite as bullet-proof as its older sibling. But the 6 also benefited from a number of developments ahead of the 8, the biggest at the time being the inclusion of MIDI.**

**This led to Roland getting a name for its products' ease of use and this classic workflow has been ported over in this new release. Hence, its representation in software makes it a perfect synth to use. It's simple to follow, but no less of a powerhouse and no less effective.**

**Yes, it's capable of classic (if perhaps dated) '80s sounds, but it's also accomplished in a modern domain. This means that you can easily create contemporary patches without the feeling of having been blindsided by the route that you took to get there.**

## Alternatively

**Roland Jupiter-8**
**$149 (part of Roland Cloud)**
The Jupiter-6 isn't currently in Roland's Cloud-based lineup, but the Jupiter-8 runs a close second

**UVI JP Legacy**
**€199 (or part of a SonicPass sub)**
UVI's expansion and sample-based library provides examples of the Jupiters 4, 6 and 8

## VERDICT

For The standalone version invites enormous creativity

Focus mode makes close-inspection editing a breeze

500 included production-ready presets

Incredibly attractive price for such a powerful instrument

Against No negatives, just a whole ton of plusses!

**If you enjoy an uncluttered signal flow with a plugin that exudes nostalgia and contemporary flare, this is a beautiful synth for all seasons**

# BLEASS SampleWiz 2

PC MAC iOS

$73

Inspired by the satisfying spontaneous immediacy of classic hardware samplers, this is a powerful up-to-date sampler. **By Stuart Adams**

> Last year, BLEASS released the SampleWiz 2 sampler app and AUv3 plugin for iOS. The app and plugin were developed in partnership with world-renowned keyboardist Jordan Rudess, the brains behind the first incarnation of SampleWiz. Now, BLEASS has released this same creativity-focused sampler as a plugin for desktop-based hosts.

Unlike big sampling beasts such as Kontakt and HALion, with their multiple layers and articulations, a SampleWiz 2 patch is built from just a single sample. Because of this, creating sounds with the plugin is more of an enjoyable creative process than the painstaking technical process of creating a detailed multi-sampled instrument would be. In no time at all you can go from grabbing a sound to having an original and fully playable instrument.

## Sample engines

The sample at the heart of a patch can be handled using one of three playback engines: Normal, Granular or Cloud. The first of these is the common-or-garden affair you'd expect in any sampler, with pitch adjustment, basic or ping-pong looping and loop crossfading.

In Granular mode, a short segment of the source sample – that is, a grain – is lifted from the playback position, looped, and pitch-shifted to the required note. The playback position can move continually through the sample, the grain size can be adjusted and a randomizing factor can be applied to the playback position, all of which can be used to create shifting timbres within the sound.

The Cloud playback engine uses the same concepts as Granular, with the difference lying in how playback progresses across the source sample: where the Normal and Granular engines

In no time at all you can go from grabbing a sound to having an original and fully playable instrument

can one-shot or loop across the sample, the Cloud engine defines a range within the sample and oscillates the playback position back-and-forth within this 'window'. This tends to produce a smooth, constant timbre that works pretty much perfectly as a sound-source for synthesis, and it can be particularly useful when you're creating pad sounds.

## Synth tools

On the synthesis side of things, SampleWiz 2 provides an overdrive processor, filter, delay and reverb effects, and a collection of modulators.

The overdrive and filter work well together, the former adding harmonic complexity that can be shaped and sculpted by the latter. The filter itself is BLEASS' standard unit with a choice of low-pass, high-pass, band-pass and notch modes, and it's controlled using an intuitive visualization of the filter curve that can be either touched or dragged in order to adjust cutoff and resonance settings.

The delay processor is useful if quite basic, but we think it would have benefited from modulation to allow chorus effects. The reverb is more elaborate, with modulation of the reverb wash for a thicker sound, and an interesting shimmer effect – a pitch-shifted delay line that's injected into the reverb.

## Modulation matters

The plugin packs a pair of LFOs, three ADSR envelopes (two of which are hard-wired to amp and filter) and BLEASS' Motion Sequencer, a step sequencer that outputs modulation values. The plugin also handles mod wheel, MPE Slide and MPE Pressure signals as modulation sources, with the latter defaulting to standard MIDI Channel Pressure if it's not connected to an MPE-capable controller. With the exception of the hard-wired envelopes, all of these modulation sources can be mapped to two destination synth parameters.

**It may be only one sample, but SampleWiz 2 can do a lot with it**

Overall, BLEASS' overhaul of the original SampleWiz has resulted in a sampler and instrument that manages to blend the rapid, satisfying workflow of old-school hardware samplers with the most creative and expressive aspects of modern sample-wrangling technologies. And while it may not let you make an achingly accurate emulation of a Bösendorfer piano, it's certain to put a smile on your face! em

Web www.bleass.com

**Patches can be interchanged between iOS and desktop versions**

## iOS differences

**Overall, this new desktop version of SampleWiz 2 is as close to the original iOS/iPadOS version as it's possible to get, although some elements could not be translated. The biggest difference is that the iOS version can record samples directly from the device's built-in mic – if there's a more perfect way of capturing some found sound samples we can't think of it.**

**Furthermore, the iOS version takes advantage of touchscreen interactions in ways not possible with a mouse. The on-screen keyboard can generate MPE Slide and Pressure messages, and has a Glide mode that lets you smoothly adjust note pitch by sliding your finger across the keys. Similarly, the sample waveform visualization can be used as a performance controller, letting you trigger and pitch notes, and change Granular/Cloud playback positions, by touching and stroking the waveform.**

**On the flip side, the SampleWiz 2 patch file format is identical across both versions, and can be shared easily using iCloud or AirDrop. So you can go out-and-about capturing samples on your iPhone, then transfer sounds to your desktop for further development.**

## Alternatively

**Samplr for iOS**
**$25**
With layering, slicing, tape and scratch emulation, and more, this can handle your samples adeptly

**Waves CR8**
**$29.99**
Inspired by hardware samplers, the affordable CR8 integrates directly with Waves' Cosmos library

## VERDICT

For Fast, creative workflow
Cloud engine is fantastic for pads
Overdrive processor ideal for extending harmonic complexity
Common patch file format (iOS/desktop)

Against Lacks delay modulation
Not for hyper-realistic emulations

**Focusing on creative sound design over hyper-accuracy, SampleWiz 2 rekindles the joy of making original playable instruments**

*RESONANCES*
*A standard slider for the left hand filter plus a Decay slider for the Model filter*

*DRIVE*
*Adds a bit of grunt and attitude to both filter inputs*

*FILTER MODELS*
*These graphical shapes show the filter model and you can scroll through them using this virtual trackball*

*MAIN BLEND*
*The Dry/Wet is the main control to define how much of both filters' effect is used*

*SEQUENCER*
*Choose your rate plus a variety of Shapes and Patterns*

*BLEND*
*Mix between the two filters with this control*

*MODULATION*
*Six main modulation source categories*

*EXTRAS*
*The Damping and Partials sliders home in the area of filter effect*

# Polyverse Supermodal $99 PC MAC

By using 27 models – from physical bodies to math formulae – Supermodal could be the filter you didn't know you need. **By Andy Jones**

> Filters have come a long way. We recall interviewing some of the early drum & bass producers (so early it was then called jungle) and they used hushed tones when talking about their use of these filters, sometimes not even admitting that they were behind those liquid beats and basslines. Now filters are used for just about everything: from precision EQing to tension-building risers, bassline mangling to crazy vocal effects. There are straight filters that do one job well, and multi-effect filters that do everything in as crazy a way as possible. Or there's Polyverse's Supermodal which mostly stands alone and could be the most inspiring filter you've ever used.

## Super models

Things start off in a fairly straightforward manner with the left-hand dial of the two main controls on Supermodal's UI. This one is a straight filter that can be switched between low pass, high pass and band pass. You can make swirly noises and it sounds great – all good so far. But the Modal filter to its right is where the main action is, and here you can switch between modeled filters. Each of these uses complex algorithms essentially comprising of hundreds of different filters that, according to Polyverse, "produce resonating modes in an acoustic model". Some of the models are fairly simple like a square wave, and others are based on 'real' things like the Bell and Piano models and introduce those types of sounds into the filter characteristic. Others are more complex and unreal, like the band limited noise filter, and there are also some vocal-type formant models.

There are other familiar controls and features, including input and output levels, a Wet/Dry slider and Blend control to mix

> What we love most is that a rhythmic element keeps many of the presets inspiring and 'in check'

between the two filters. There's a Resonance slider for the first filter and a Decay option for the Modal filter with similar properties. Then you get other more custom options. Damping effectively reduces higher frequencies while the Partials slider acts like a band limiter in that you can choose what part of the filter's effect range you want to use. There's also a Drive option that pushes both filter inputs, plus Xform, that blends between filter transformations.

## Modal results

While Supermodal prides itself on those 27 filter types – and these do take it well beyond what most other filters offer, it's really their combination with the modulation section (see right) that impresses us the most. The results can be heard most obviously through the very wide-ranging set of well over 200 presets which are categorized by their effect (Subtle, Dirty, and we love this: 'Artsy') or simply 'Drums'.

There's a bit of everything here from the deepest, dubbiest, most swirling delays, to melancholic reverberated note sequences, all from a simple input source. What we love most is that a rhythmic element keeps many of the presets inspiring (you'll want to create entire basslines, breaks and leads with the results) but also kind of 'in check' so that everything falls well within usable parameters.

Indeed Supermodal has taken us by surprise with its more classy results which somehow manage to be usable and not too gimmicky – a big issue with some of the more creative filters out there. That combination of filter algorithms and modulation options is a perfect and easily manipulatable marriage and takes Supermodal to another level where few others have reached.

It really is a case of playing a couple of notes or beats through this beast, and creating entire tracks from them. You might not know where you're going, and there will be twists and turns, but what a creative journey you'll have. 3m

Web www.polyversemusic.com

**Once you've assigned modulations sources, a Modulation Popup Button appears next to available destinations**

**The four modulation options are at the bottom of the screen. As you can see, we're particularly taken with the Sequencer option which adds dynamics and life to any sound you throw at it**

## Super modulation

**Supermodal's extensive modulation section – similar to that used in other Polyverse plugins like the Manipulator vocal effect – really gives the plugin its edge. Here you get up to four sections where you can choose from six main modulation sources including sequencer/LFO, Meta Knob, envelopes, Random or external MIDI/CV. Once you choose a source, a very cool Supermodal feature adds a small Modulation Pop-up Button to any main parameter that can be a destination so you can easily apply, say, a sequencer pattern to a variety of destinations. Of the main sources, we're particularly smitten by this Sequencer which lets you easily select rate, shapes or patterns for any source and really does create complex and dynamic sequences, all kept in time should you wish. We also like the Random option which is very flexible, with rhythm and pitch options plus a depth control so you can really go off road. Some great modulation options overall!**

## Alternatively

**UVI Shade**
**$129**
A creative filter that has powerful dynamic effects via a range of different filters and modulation

**Soundtoys FilterFreak 2**
**$149**
It's been around for years but has a unique character and sound which makes it a firm producer favorite

## VERDICT

For Great animated interface
Deep sound design tool
Fabulous modulation options both inspire and surprise
Impressive filter models
... And presets!

Against Nothing negative to report, it's fantastic

**Supermodal is everything a good creative effect should be: inspiring, deep, not too complex or gimmicky. In short: amazing**

# Spectrasonics Twisted Trees Sonic Extension

PC MAC

$149

If you go down to the woods today, you'll be surprised to find a sound-designer not so much hugging trees as hitting them! **By Dave Gale**

Spectrasonics holds one of the loftiest reputations within the realm of samples, sound design and virtual instruments. It's behind some of the most radical sampling projects ever captured, from trips to the Amazon, to burning pianos. Its relatively new creative line, Sonic Extensions, provides amazing sounds with vast amounts of realtime control, all categorized by expansion pack.

Following the initial release of four Sonic Extensions, the latest extension arrives completely out of the blue, as a sole release. All of the Sonic Extensions operate from within the Omnisphere realm, so you'll need that meaty synth to access your new sounds. That could make an initial purchase more involved, but then again Omnisphere is one of the most sonically impressive packages on the market, so this might just be the prompt you need.

Spectrasonics has an impressive roster of sound designers; Diego Stocco is the sound designer behind the Twisted Trees collection, with the raw sampled content being created entirely from wood, bark or associated elements, such as branches and leaves. At this point, you might be wondering (as we were) how far can this actually go? The answer is immediately forthcoming, from the moment you access the patches. It is incredibly impressive, although you might have to take a leap of imagination, as many of sounds require a slight adjustment to work in your projects.

## Stripping bark

To provide a flavor of the direction and process, Diego created one sampled source by stripping

You may find yourself forced to rethink elements of your work and that could be a very healthy thing

the bark from a tree, applying it to the rim of a floor tom, which was then mounted on a potter's wheel. As the drum and newly attached bark revolved, large sticks were dragged across the surface, while the audio was captured.

The result is a highly complex sound-source which, once placed through the prism of Omnisphere, returns a multitude of organic mid-to-low-end frequencies. Other similarly exotic processes exploit the use of percussion mallets, power tools and string bows, creating a suite of 432 soundsources through 1.8GB of samples, packaged into more than 300 unique patches.

Once we delve into the Omnisphere realm, the patches themselves contain scenes; these are mixes or combinations of multi-sampled elements, combined to create a texture or patch, but with capacity to switch quickly, or adjust individual sample levels.

Despite the relatively narrow wood-based concept, the output from Omnisphere ranges from beautiful and majestic pads, to heavy and floor-shaking percussion. There's even a percussion patch, which presents an extraordinary kit of wood-based parts.

Of course, the power of the Omnisphere engine is incredibly influential across the library. There is a depth and quality to the colorful timbre that is unique, but the usual menu hierarchy is still in full effect, with a complex combination of sequencer-based patches, hits, noises, pads and textures all available within.

## Final forest thoughts

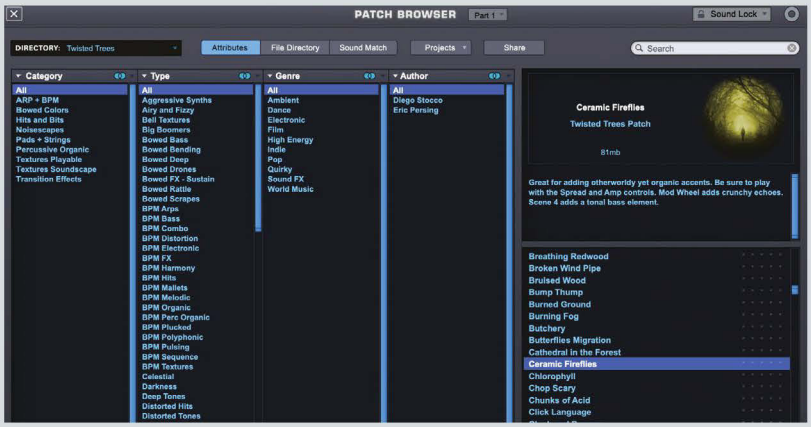
The sonic identity of this Sonic Extension is as unique as it is impressive. It won't come as a surprise to existing Spectrasonics users to learn that the company prioritized quality in the making of Twisted Trees.

The question though, for any prospective purchaser, is whether these sounds resonate with you. Are they any good? Yes, but are they useful for everyday production? Possibly less so, although that's dependent on your working style. You may find yourself forced to rethink elements of your work after trying this palette, and that could be a very healthy thing indeed.

Meanwhile, for anyone creating soundtrack or ambient music, this library will immediately find its fanbase. em

Web www.sonicextensions.com
Info Discounts available with multiple Sonic Extension purchases. Requires Spectrasonics Omnisphere 2.8 or higher

Twisted Root and Twisted Space are two brand new effects that can be used elsewhere in Omnisphere patches too




Omnisphere presents menus in a more extensive format, to assist in locating your sound of choice

## The Omnispehere collective

**Eric Persing is the creative and guiding force behind Spectrasonics. He is behind some of the most recognizable synthetic and sampled sounds of the last 35 years, which you'll hear as much on '80s pop records as you will in current Hollywood soundtracks. It's fair to say that Omnisphere has mutated into a bit of a monster. It has morphed into a huge plugin format, which not only hosts the Sonic Extensions that we're reviewing here, but also bass, piano and creative libraries. We've not even mentioned the unbelievably impressive core library, which hosts close to 15,000 patches, or the fact that Omnisphere provides hardware controller support for an impressive array of current and older MIDI-equipped synthesizers. Imagine controlling Omnisphere from a Moog Sub Phatty or Roland Boutique module; this you can do! But alongside this impressive critique, it sounds utterly stunning, and has become one of the most widely used and versatile plugin synths on the market today, and it's still being developed. If the prospect of Twisted Trees has piqued your interest, you'll need Omnisphere too, and that could be one of the best purchases you could ever make.**

## Alternatively

**Spitfire Audio Mercury**
**$184**
One-of-a-kind instruments, powered from the mind of Hollywood designer Chas Smith

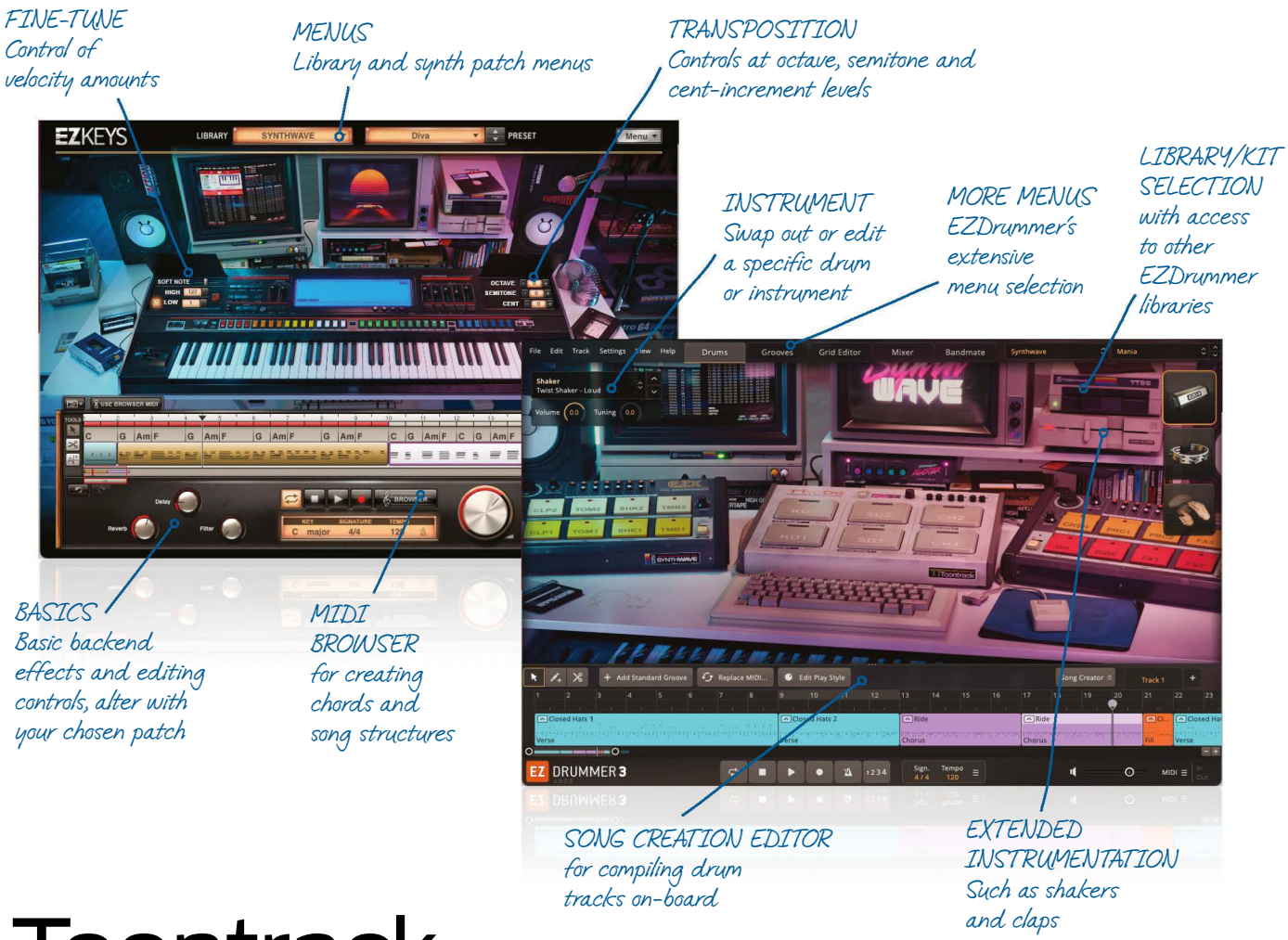
**Soniccouture Geosonics II**
**$220**
Forests, wind, ice and more, all from raw recordings made by legendary recordist Chris Watson

## VERDICT

For Incredibly diverse collection of sonic colors
Percussive textures give plenty of punch
A great deal of onboard control
All-new Twisted Root and Twisted Space effects units
Could easily influence creative direction

Against Veers into experimental realms, which might not suit your sound

**Libraries of this caliber are relatively rare. Twisted Trees is a surprising package of astounding sounds from organic sources, that may invite you to question your musical direction**




# Toontrack EZKeys Synthwave & EZX Expansion

**$79** PC MAC

Want your track to sound like it was birthed in the technicolor '80s? Toontrack are on hand. **By Dave Gale**

> Many things in life are assured; night following day, and paying your taxes to name but two, but we could also mention Toontrack, who reliably create useful products and expansions, for their ever-popular band-in-a-plugin software.

## Riding the new Synthwave

This time, it's Synthwave that gets the Toontrack treatment, with the release of two expansion packs designed to fulfil your every whim, at least in terms of '80s synth and drum sounds. The branding 'EZKeys Synthwave' pretty much tells you everything that you need to know, but what's less clear is how far you can go with this expansion. You'll need a copy of EZKeys, to act as host for this pack. If you don't own EZKeys, there is an option to buy the application alongside the expansion, and of course once you have it, you can access all of the other EZKeys libraries.

The EZ remit is to assist producers or musicians, who are looking for inspiration in both sounds and phrases. Bizarrely, MIDI phrases do not ship with this pack as standard, meaning that you'll be reliant on your own stylistic performances, or need to spend an additional $29 on the associated Synthwave MIDI notes and phrases pack.

However, the expansion pack itself is filled to the brim with classic '80s synth sounds. All sounds are categorized by menu, including basses, keys, leads, pads and more. There is a guitar category, but these are all synth-derived, with chord thrashing removed at source. The sonic quality of the content is excellent, being drawn from a plethora of vintage '80s synths, ranging from analog Roland Jupiters to digital and FM-based Yamaha DXs. It's all production-

Two expansion packs designed to fulfil your every whim, at least in terms of ’80s synths

ready but with limited access to editing. Edit controls and parameters are patch-dependent, reflecting the chosen sound. You’ll generally have access to a global low-pass filter (cutoff control only), delay and reverb, with the occasional appearance of chorus or the release phase from the envelope. One thing we did notice is that the filter pot operates in reverse to what you might expect; when to the left, it’s open, and to the right, it’s closed!

## Drum-waves

The ideal companion to EZKeys is the Synthwave expansion for EZDrummer 3 or Superior Drummer 3. You’ll also need either of these two packages in order to install Toontrack’s EZX expansion libraries.

It may not surprise you to learn that this pack also contains a vast array of sounds, sourced from electronic drums and drum machines from the ’80s. Linn drums reside next to 808s and 909s, with 440 fully produced sounds which are ready-to-go. The 20 mix-ready kits are also accompanied by MIDI content; it’s a useful startpoint to select one of these kits, and then run the associated MIDI track, indicated by the same track and kit name. It’ll give you an instant ’80s feel, with minimum hassle.

Within EZDrummer, you can also swap out different drums or other elements from within a kit, and while EZDrummer offers a basic amount of editing, Superior Drummer provides far more capacity for editing and controlling drum sources, such as control over a drum’s envelope.

## Cutting the mix

The mixer page provides plenty of options for refining a selected kit, although for our money, the sounds are a cut above the average collection of electronic drums sounds, packing plenty of punch, albeit with a very stylized ’80s slant.

**The mixer page allows plenty of drum control, at the instrument level**

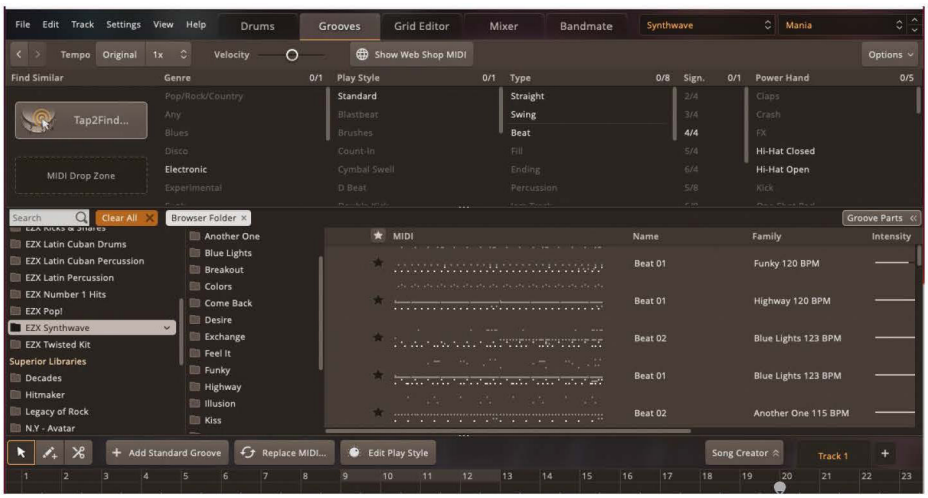
## Standing alone

**The EZKeys and EZDrummer lineups have developed immeasurably since initial releases. EZKeys is an exceptionally useful aid, for anyone that requires better keyboard parts, whose fingers just cannot muster the required notes. In much the same way, EZDrummer provides great sonic content, coupled with groove templates which may be generated by machines or humans, with the latter bringing groove to the DAW-shaped table. Where Toontrack have made great strides is with the ability to build entire tracks, within their plugins, allowing editing of notes onboard. This can be especially useful for analyzing parts, and muting or removing elements which might be surplus to your requirements. Either way, their onboard content runs happily in their standalone versions, or will sync perfectly to your DAW, should you wish to merely operate in sync. You can also transfer the MIDI directly to your DAW, if you want to keep all of your notes housed within a single environment. Flexibility is very much the name of the game here, and Toontrack have you covered for all eventualities.**

## Playing in pairs

These two expansion packs could be regarded as another completed tick on the Toontrack to-do list. Notably, the sonic content is exemplary, across both expansions, but the lack of sound editing, particularly within the EZKeys domain, might prove challenging to more seasoned synthesists. em

Web www.toontrack.com




**The Synthwave EZX Expansion includes matching MIDI drum grooves, to accompany the 20 production-ready kits**

## Alternatively

**Roland Cloud subscription from $2.99 per month**
Reincarnates all of the classic drum machines and synths in software, albeit without MIDI content

**Arturia Analog Lab V**
**$213**
Some of the finest vintage and current synth sounds around, all collated into a single plugin

## VERDICT

For Great-sounding collection of synth and drum samples
Good diversity of keyboard sounds
Sounds are produced to perfection
Ideal for getting ideas down quickly

Against No MIDI content included with EZKeys Synthwave
Synth sound editing is lacking

**Given the popularity of Synthwave, these expansions are on-trend and sound fantastic, with a ton of sonic diversity**

# Soundiron – Voice of Rage 2.0 $119

We get to test a very wide range of soundware here at Electronic Musician, with some perhaps having a little less broad appeal than others. However, it is also fair to say that it's often those that at first sight appear useable in only in rather niche contexts that end up being more inspiring and universally applicable than first impressions might suggest.

It's with this in mind that I came to Soundiron's *Voices Of Rage 2.0*. Its name and packaging clearly give away the intent of this Kontakt-based instrument library, but to be clear, this is not simply a bank of recordings of angry choristers!

VOR is based around recordings from a range of vocalists that fit firmly in the death metal and hardcore universe. There are five vocalists included, and they were captured singing a range of phrases (with dynamic and condenser mics). You'll also find 'Wordmaster' instruments where it's possible to build your own sequenced phrases.

There are controls for tweaking the sound and shape of the samples and with some diligence you will be rewarded with interesting mangled vocals elements. It's perhaps here that VOR might find most use. There's always a danger that phrase-based vocal instruments can sound slightly artificial in terms of performance, but this library is unlike most others, and with a suitable backing track – I chose to create some bombastic synth-led horror tracks – there's a whole lot of scope for creativity.

The 'Mixi Sustains' are a nice addition – and perhaps more widely usable than other sections – and whilst the interface is not quite as polished as some other Kontakt libraries (and with a few functional anomalies), overall I found 'Voices Of Rage' an interesting antidote to other vocal libraries.

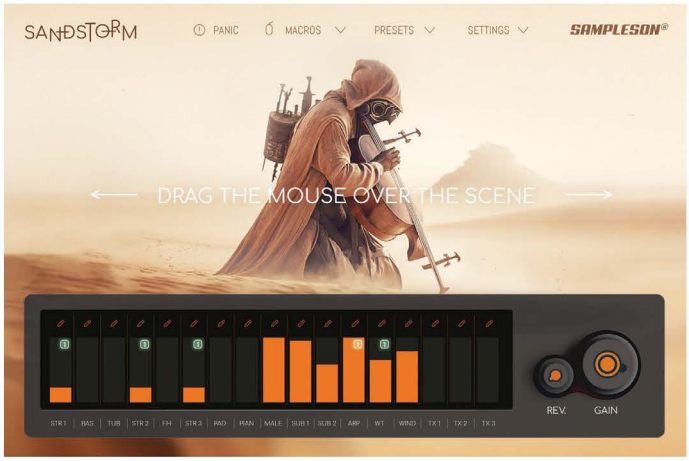
***Bruce Aisher***

**soundiron.com**

# Sampleson – Sandstorm $59

Sampleson are not new to these pages, but unlike their last outing here (MetaPiano), their latest product fits more squarely within the conventional sample-based approach of Kontakt and similar audio engines. Sandstorm is an 'evolving soundscape builder'. The core principle behind this is its ability to layer up to 17 elements, each dedicated to a particular instruments, sound or synthesis technique. Sound levels are assignable to a mouse macro control, whereupon horizontal mouse movements alter the balance of multiple audio elements simultaneously. Each layer gets its own set of different editing controls, which help you finesse everything before the mix process, and there are a decent range of presets included.

Whilst this looks good and is an interesting concept – capable of some quite engaging and useful results – Sandstorm does not quite deliver on the usability front. Quite a lot of mouse clicking is required when moving between layers, and the mouse-drag macro-editing window does not allow you to test any mouse-based level control configurations without returning to the main screen.




Also, editing of some layers is on the frugal side in terms of parameters, which means that having so many layers is not as powerful as it might seem.

That said, for those who dislike complex modulation pages this could be a more painless way to get a decent array of soundscapes.

***Bruce Aisher***

**sampleson.com**

# The Brothers Nylon – Funk & Soul Variations 2 $37

New York's twin bro funkateers are back with a badass follow up to their debut deep funk sample pack. Fans of the first and its vintage tape-warmed grooves will be hopping on that good foot over this latest instalment of heavyweight live playing and loops.

More old school studio gear has been fired up to capture another round of breakbeat business, cool keys, wigged-out guitars, Rhodes, and bags of boogie bass for the bottom-end boys and girls among us.

In total, there's over half a GB of seriously groovy samples to wade through, plus, the usual generous handful of tough song-starting kits to fawn over.

So, if you're looking for funk and soul ideas for your next track, let the brothers work it out.

*Roy Spencer*

loopmasters.com

## DABROmusic – Midtempo Samples $25

Chunks of rap, rock, and electro get thrown in the blender, mixed with phat drums, weighty basslines, and incessant bleep and bloops, alongside heart-starting FX loops, risers and every other drop-filling sonic you'll need to glue it together.

Fans of that old ghetto-funk sound, modern takes on glitch-hop, and other tougher 100-110bpm beats and wobbles will find plenty to fill out their tracks in this cache.

It's made for music in that meaty mid, club-rocking tempo that doesn't climb to house heights, but comes in quicker than lower slung post-hip-hop. The only thing "mid" is the speed.

*Roy Spencer* loopmasters.com

## Audiotent – Pure Claps $26

The studio dons at AT have once again delivered a laser-focused collection of single hits as part of their PURE series sample pack concept. It's 100% claps this time. And for the task, they've recruited a who's who of iconic, legendary, prized and sought after drum machines and modular synthesizers.

Everything from the crisp ringing tones of the Roland TR-707 to the tweeter-freaking definition of the Elektron Analog Rytm MKII are tracked at the highest degree through a saintly Neve 88RLB preamp for maximum resolution.

All the dials have been edged and tweaked with love and affection, leaving you with a library of claps that deserve their own standing ovation.

*Roy Spencer* audiotent.com

## Splice – MXXWLL Sounds Vol. 1 From $7.99/month

Maxwell Bidstrup, known in his native Sydney as MXXWLL, delights with his G-funk friendly rap compositions. Outside Oz, his beats have turned heads of US OGs like Snoop and Jazzy Jeff, thanks to his slick synth skills.

On this, the first of his new artist series, the shaggy-haired beat-tape enthusiast furnishes the kind of grooves normally reserved for Ty Dolla Sign.

The drums stagger and slouch, as the keys wander wide-eyed around the belchy bass and tinkly chimes.

Perfectly primed and polished, ready to do the do, for you.

*Roy Spencer* splice.com

## Sample Magic – Breaks & Beats 3 From $7.99/month

Put down your drumsticks and stow away that snare. You've got all the breaks you'll ever need right here. The 350+ delightfully flipped drum samples and punchy, programmed beats on side in volume 3 of this series are all straight dripping in old school soul flavor, boom-bap break science, and dusty-fingered tones.

Each loop has been run through a choice chain of gear, too, with bit-crushing and MPC-style grit added expertly, alongside tape-machine sampling, which gets liberally thrown in this classy collection for extra dimensions of charm.

*Roy Spencer*

splice.com

# Modulation effects

## Warble your way to smooth signals and push things into experimental territory with our guide to phasers, chorus and flangers

Modulation effects are early staples of music production and electric instrument soundcraft. As producers, we almost all know how flange, chorus or phaser effects sound, and we know that the range of sonic possibilities are vast. Take a signal, make a copy and modulate the copy, applying some processes to its fast or slow movement. Modulation effects have been with us for a long time, because their early forms were quite easy to bring about.

It was a relatively simple step for an experimental engineer to duplicate a taped audio signal and to rhythmically slow one copy down and back up again. This would be exactly the same mechanism that first produced flanging, which is so called because the pressure was applied to the 'flange' of one of the reel-to-reel tape machines.

So the story goes, the flanging effect was first dreamt up for the Beatles song *Tomorrow Never Knows* when John Lennon requested producer George Martin to make his voice sound like "the Dalai Lama chanting from a mountaintop". The effect was a sweeping, oscillating curve of sound, and it caught on enough to be replicated by dedicated hardware effects, most notably the Electro-Harmonix Electric Mistress and the MXR Flanger. Thanks to these, you'll hear flanging effects on the likes of classic releases by Pink Floyd, The Police and Van Halen, as well as countless others.

Flanging's modulation sibling is the chorus effect. Slightly different to the flanger in its use of a longer delay between the duplicated pieces of audio, the chorus gets into a realm where our hearing system starts hearing double, making the effect useful for stereo effects or the simulation of ensemble setups.

It makes sense – if two violins or human choral singers perform the same melody, they'll inevitably drift in pitch and timing, no matter how skilled. And when you get an entire ensemble together, this natural 'chorus' effect sounds super-sweet. Chorus effects replicate just that, but have been co-opted for uses all their own, with classic examples found in Nirvana's *Come As You Are* or Dire Straits' *Sultans of Swing*.

Phasers are the third key modulation effect in the line-up, with

a very related sound to flanger and chorus effects, although this comes about through different circuits. Phasers found their most welcome homes in psychedelic rock, and often in funk too.

Songs like Jimi Hendrix's *Little Wing* and Chic's *Good Times* (on the bass) typify the classic use of a phaser, but naturally, more modern uses have appeared since. Phasers find a nice home on lead synths, and you'll find more recent examples of this in tracks like Porter Robinson's *Divinity* and Daft Punk's *Starboy*.

That's a potted history of our three main modulation effects, where to hear them and how to understand them. In the rest of this feature, we'll concentrate on some practical uses and how you can put flangers, phasers and chorus effects to work in your DAW.

Tape decks created the first analog modulation effects, but stompboxes and studio rack devices soon took over to provide dedicated effects

# The basics: how flangers, chorus and phasers work

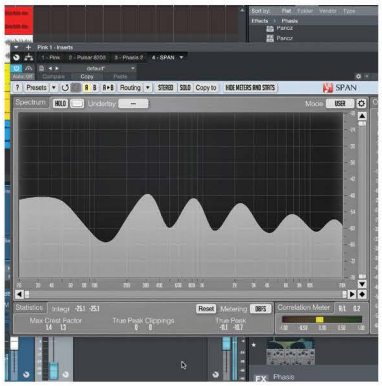
**1** A flanger takes the signal, duplicates it, and then 'slows' one copy down and back up again to create its sweeping, undulating effect. The delay between the two copies is usually up to 10 milliseconds, and that delay time is modulated by an LFO.

**2** Here's the flanger's effect on white noise on a spectrogram. Resonant peaks are created at comb-filter relationships. These peaks move up and down with the LFO modulation. Character changes with Feedback, number of Voices and so on.

**3** At its root, a chorus is similar to a flanger, but the delay time extends to between 20 and 50 milliseconds. The effect is rich, dense, and can give the impression of multiple instruments playing or a detuning, depending on the application.

**4** Here's how a chorus looks in the frequency domain. As Feedback goes up, this plugin loses low- and high-frequency information. Importantly, the notches and peaks in the frequency spectrum move faster and more busily.

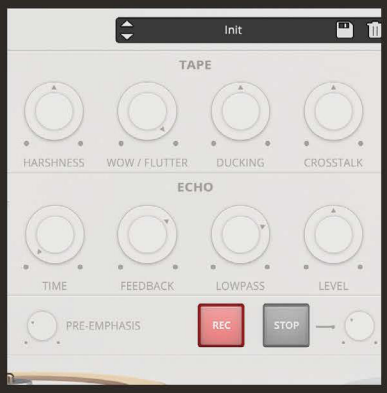
**5** A phaser splits the signal into two paths and passes one through a series of all-pass filters, altering the phase without changing frequency. The two paths recombine, and the result is modulated by an LFO, for a swirling, often metallic sound.



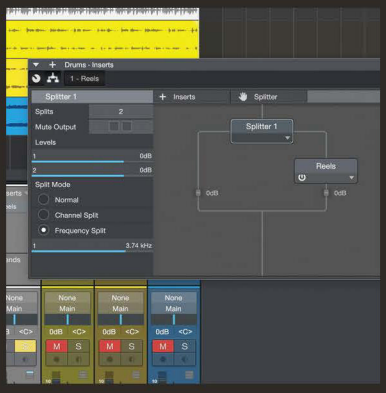
**6** Here it is on the frequency spectrum. Its notches sweep over a huge range of frequencies, increasing depth with Feedback amount. Like a barber pole, the notches keep moving through the spectrum, seemingly endlessly.

# Flanging on the high frequencies of a drum bus

1 Let's roll our own 'authentic' flanger using a tape emulation plugin. With AudioThing Reels, you can set the Mix to split the channels, and set the Echo to about 8ms at Wet Only. You can use the Wow and Flutter control to provide some movement.




2 Flanging on drums can be a cheesy move, but we've kept it classy by using the tape properties instead of using a dedicated flanger. We'll alleviate the 'wetness' of flanging drums so that these two elements go together just fine.




3 We use Studio One's Channel Editor to put a Splitter element before the Reels plugin. We set the split mode to Frequency Split, and set the crossover to about 4kHz. Now, our flanger is only working on the drums' high frequencies.

4 The result is a smoother top-end, with the flanger dulling the hats and rides in a natural way. The top end is thicker and more animated. Try adding other modulation effects to high frequencies on other instruments to smooth them out.

## SUBTLER USES FOR MODULATION EFFECTS

Reaching for a phaser, chorus or flanger effect doesn't have to involve an acid trip every single time. There are some more restrained ways to use these plugins that we'll show you here with some high-end drum flanging and some chorus reverb modulation. Chorus effects can thicken and 'double' sounds, so look out for potential subtle uses on any instrument that needs an extra sense of width.

Phasers can be great on lead sounds, giving 'that little extra something' when applied in small amounts. Keep the depth dial down low to give a metallic edge to the upper frequencies of a bassline or to make a lead sound more interesting. For flangers, try a smattering on a vocal track to keep things subconsciously interesting. A singer or speaker moving their head near a microphone – especially during a breath – can produce a natural flanging sound, so you can apply it to add more intimacy and spirit.

# Adding chorus to reverb

1 You may have noticed that reverb effects often have chorus, ensemble or 'modulation' processes included. These are usually placed to smooth out the reverb sound and 'calm' the tail. We can use a whole chorus processor to tailor this effect ourselves.

2 Here in Spectral Plugins' Spacer, we have a choice of reverb and delay modules, and we've got a nice-sounding reverb ready… but we can also turn to the Chorus, placing it just over the reverb's signal to affect just that tone.

3 We can also use other spatial effects, including the Dimension Expander, Haas stereo effect and more, making our reverb wider, more interesting and more characterful.

# Deeper parameters in modulation effects

There's usually a bit more to a modulation plugin than just basic controls. Here's how some of the other parameters that you might find work…

'Voices' refers to the number of copies of the original signal that the modulation effect creates. For example, a chorus effect with three voices would create three slightly detuned copies of the original signal. Increasing the number of voices can help create a thicker, richer sound, but it can also make the effect sound more artificial.

Feedback refers to the amount of the effect's output that is fed back into the input, creating a looping effect. In a flanger or phaser effect, increasing the feedback can create a more intense and resonant sound. However, too much feedback can cause the effect to become unstable and produce unwanted noise.

INCREASING THE NUMBER OF VOICES CAN HELP TO CREATE A THICKER, RICHER SOUND

Notches are specific frequencies attenuated or boosted by the modulation effect. In a phaser effect, for example, notches are created by the phase cancellations that occur when two signals combine. By adjusting the notches, you can create different tonal colors and textures. Center refers to the frequency around which the modulation effect is centered. In a flanger effect, for example, the center frequency is the frequency at which the effect's delay time is shortest. Adjusting the center frequency can change the character of the effect, making it brighter or darker.

Spread refers to the amount of detuning applied to the copies of the original signal created by the modulation effect. A wider spread creates a more pronounced detuning effect, while a narrower spread makes a subtler effect. The spread parameter is often used in chorus effects to create a thick, lush sound. Width refers to the stereo width of the effect. A wider width creates a more immersive sound, while narrower will create a more focused sound. The width parameter is often used in chorus and flanger effects to create a sense of stereo spread.

## Exploring adavanced modulation parameters

1 Let's dig deeper into modulation parameters. Here in Native Instruments' Choral, we'll start with the Mix control, which controls how much of the effect (vs the dry original signal) is present.

2 LFO settings control movement speed of delayed and copied signal. By increasing Amount, we can increase the LFO modulation depth, and Rate makes it slower or faster. We put the speed so high that it smooths everything out again.

3 The Voices parameter creates the chorus effect multiple times, using different delay times for a thicker effect. With the actual Delay parameter, we change the base time of those knobs. Feedback sends the whole effect through itself again.

4 The phaser has a Notches parameter that commands the number of frequency dips. We also get Spread and Stereo parameters. Spread moves the notches further apart/closer, while stereo creates an offset between left and right channels.

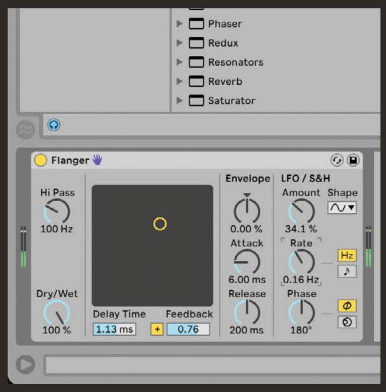
5 Since flanging is centered more around a particular frequency and note, this flanger gives us the ability to literally tune its operation to a particular note and frequency. There's even a scale selector to choose how multiple voices are spread.

6 A digital flanger needs lookahead to act like a tape flanger. As a tape has recorded data on it, you can move it slightly earlier in time than the 'straight' copy. In a DAW, this kind of 'through zero' flanging is possible but needs lookahead activating.

# Classic uses of modulation effects

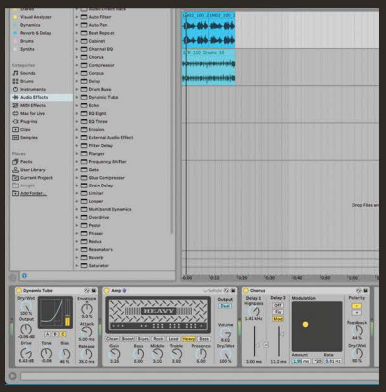
1 A phaser on a guitar is an absolute classic, creating movement across the frequency spectrum that picks out different parts of notes at different times. Try it drier for a less obvious effect that engages for longer.

2 Perhaps even more classic is the phaser on an electric piano. Instant Billy Joel is available using a Rhodes and Small Stone phaser combo. Here, Bitwig's Phaser+ can emulate multiple styles and gives a few controls to tailor the effect.

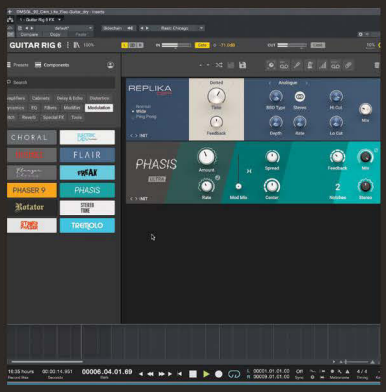



3 Guitars work well with flangers, and were the recipient of the most iconic all-in-one solutions, despite flanging having been invented for vocals. Flanging can be full-on or nice and subtle, and will lend a sense of movement and spread to a guitar part.

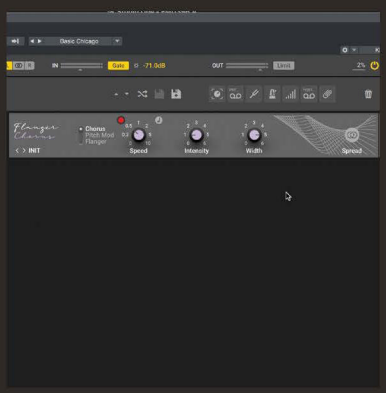
4 An electric piano can take a chorus and run with it. We get a somewhat detuned sound reminiscent of Stevie Wonder's tone. Play with the electric piano's EQ on the way into the chorus to get some brighter or duller sounds.



5 Guitars sound great with chorus, but another spin on this is to take a solo guitar and run it through a heavy distortion before hitting the chorus pedal. This gives the signal more stability as the distortion tames the dynamic range, but the chorus wonks it right back up again.




6 Try following a delay with a phaser, especially on a guitar signal. In fact, you may prefer to run the phaser into the delay for a slight twist. Either way, enjoy the swirling repeats that keep things out of this world. Here's the setup running as part of Guitar Rig 6.




7 For vocals, flanging is the obvious choice, but don't go overboard – keeping it light will add a sense of air and space, and can enhance the perceived width of a vocal without absolutely drowning it in 'special fx'.

8 And even on bass, modulation effects like chorus can lend a much deeper feel to the high end. Just make sure to keep the lowest frequencies free from modulation effects, as this kind of movement can reduce a solid bass sound into a quivering mess.

## POWER TIP

Orchestral instruments can benefit from modulation effects. Though there's nothing more realistic than real instruments played together, you get some of the way using a chorus or flanger effect with light settings. But for best results, use these plugins as creative effects to twist the sounds of strings and woodwinds into something less recognizable.

# All-in-one plugin solutions

You'll still find phasing, chorusing and flanging available mostly as separate plugins, but there are some options for getting those three effects out of a single one. Waves MetaFlanger, for example, offers flanging into higher rates that cover chorus as well, and the plugin has both phaser and doubler effects to sate your phasing, chorusy desires. You could try Soundtoys Crystallizer for combined phaser, pitch shifting and delay effects – using shorter delay times on a medium Mix level will introduce that flanger or chorus style you're looking for. MeldaProduction's catalog is also on-hand for effects like these. In MPhaserMB, a multiband phaser is joined by a chorus effect too, and there's multiband control over all. For more combinations of these effects, any amp simulator package – Guitar Rig, AmpliTube or Bias FX – will offer separate 'stompboxes' for modulation as part of a single plugin.

Soundtoys Crystallizer gets you elements of phasing, pitchshifting, and the delay you need to roll your own flanger or chorus plugin

## THREE OF THE BEST

### D16 Group Fazortan 2 $56

1 A comprehensive analog-style phaser with two LFOs for sweeping, and Center and Phase controls. Choose your number of phasing 'stages' to deepen the effect. The use of dual LFOs is one of Fazortan's best features, letting you dial in complex movement.

**d16.pl**

### Brainworx bx_ bluechorus2 $16

2 Want a Boss CE-2 chorus pedal in your DAW? This Brainworx emulation of it is a great option at a very low price. The modeling experts' finely-tuned version of the pedal gives you access to chorus and even rotary effects for guitars, keyboards and more.

**brainworx.com**

### Eventide Instant Flanger MkII $142

3 A classic 1975 flanger device, modeled by the company that actually made it. Eventide have a heritage in modulation and pitchshifting, and Instant Flanger MkII gives you tonal depth with a truly analog sound. There's also a real bevvy of parameters to dial in your ideal flanging effect on any source.

**eventide.com**

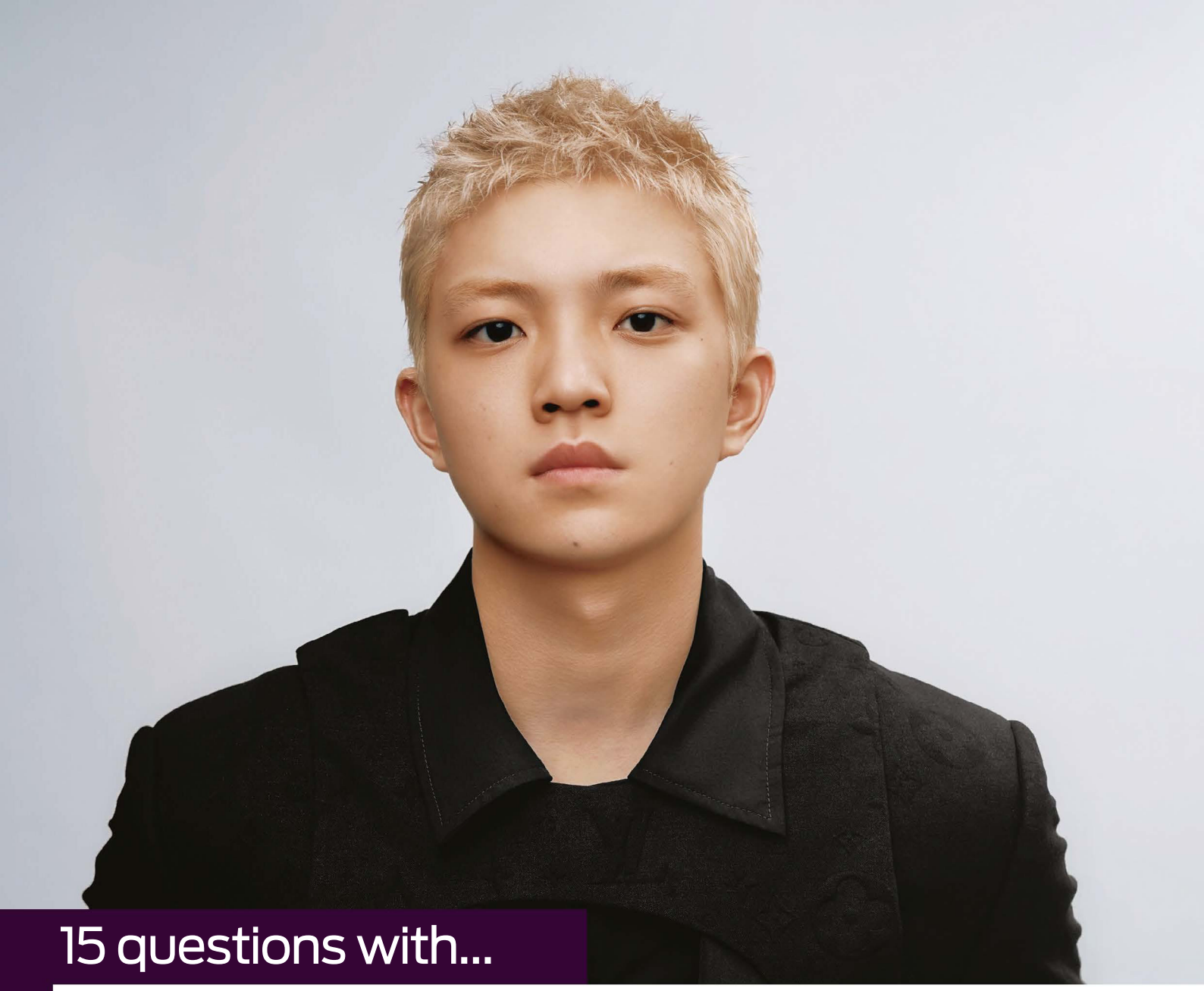
## Vocal transformation with modulation effects

1 Today's vocal parts are heavily processed by detuning and other effects. Let's get to grips with how modulation can interact with these to enhance the effect. Here's a track demonstration with some vocals in tow. Let's cook them up in the modern way.

2 We reach for Soundtoys Little AlterBoy, a classic for deep vocal effects and formant shifting. We also take the signal apart using distortion from a Kilohearts Snap-in. It's now bolder, but lacks movement and needs its edges smoothing.

3 Let's use a phaser for that movement. The effect is different depending on where you put it in the signal chain. At the end, the effect can be reduced somewhat, while with the phaser at the start, you can go harder to pitchshift and distort its effect.

4 Here's another version. With a light flanger at the start of the chain, plus a faster chorus effect (with a low Mix value) at the end, we get a more interesting modulation effect. These two effects do similar things, one at a fast level and another slow.



15 questions with...

# Chace

As the first Chinese DJ to play Tomorrowland, Chace has already broken ground in the world of EDM. He has also been compared to The Weeknd and Disclosure. Oh and Justin Bieber, but let's not go there. However, his producing destiny might not have been fulfilled had he not started 'messing around with a computer' when he was younger...

**> Shanghai producer, DJ, singer and songwriter Chace (Zhu Yihan) was the first Chinese DJ to play Tomorrowland back in 2016. Dutch record production duo Yellow Claw told *Mixmag*, "for a 17-year-old to compose, write and even sing on all of his records like he does is just mindblowing. He is heading for flashing lights and stadium status, you'll see!"**

**And they were right. After recording the track *Stranger* with Yellow Claw, Chace has now played gigs across the globe including Festival X around Australia, Creamfields in the UK and the EDC Japan Music Festival. He released his debut album, *Belated Suffocation*, to critical acclaim at the end of last year, and looks set to maintain this momentum well into 2023. He also has some cracking advice on EQ-ing and other processing which has made us completely rethink our kick drums.**

**1 How did you start out in music production in the first place?**

My dad is a musician and music has been my passion since I can remember. Drumming was my main thing for years, and my father took me to get lessons that required seven-hour drives every week for seven years. I got into music production when I was 11. To my parents it's just me messing with computers so it didn't strike them as a profession at all, plus we were seriously considering applying for Berklee so things were at stake. But I kept trying to prove that it's a solid way of being creative and I was working on music for years. I eventually got their approval to let me sign to a label in Amsterdam; that's probably the start of my journey. Imagine if I didn't get to keep working with computers – I'd be a drumming teacher somewhere in China for sure!

> "If I didn't work with computers, I'd be a drumming teacher somewhere in China!"

**2 How did you start 'messing' with computers in the first place?**

I've always been a geek with computers since I was a kid, drawing with a computer, making website designs with Powerpoint, photoshopping, and editing GIFs of characters from the *King of Fighters*. I find messing with this stuff satisfying and fun, but it felt like a separate passion, because music at that time to me was all about drumming, and I don't need a computer to drum.

**3 So when did you discover the computer music route to music production?**

My setup only became a *music* workstation for me because I wanted to do acappella covers, thanks to seeing a video from a guy called Mike Tompkins. He's the dude that does acappella cover videos by beatboxing and mimicking instruments with his voice. I really wanted to try to be like him because of the way he did those videos, and how he beatboxed looked so cool. I discovered Adobe Audition, which is not even a DAW, and I started turning knobs and faders to see what the whole thing is about. That was my way into production and I feel silly just talking about it!

**4 When and how would you say you became successful, or at least able to make a living from music?**

I got my first DJ gig when I was 15 years old. It was only for 200 bucks but it made me realize there's a way to grind. To be honest I've always tried to do less commercial work and I almost felt like I'm somehow against making money, but trying to stay true to myself and at the same

time, showing my value is a fun thing to manage. It's hard, but to me it's the way to do it.

**5 What is your production philosophy?**
I don't read music sheets and I've always acted on feel. It doesn't matter if it's the way I hear things, or the way I play drums, or the way I produce – getting that butterfly in my gut is my cue to continue. It's funny how you learn so many things on paper and you memorize so many music theories, and later you find out the goal is to use them as little as possible, because they are for you to solve problems.

**6 Tell us about the gear in your studio**
I have a pretty big studio – it's one big room filled with gear, and I don't even know where to start. I have many drum sets, many vintage guitars, many guitar pedals, many vintage synths, many rack units, many mics... I'm really proud of all my tools. The only rabbit hole I haven't dived down into is synth modules, and we all know how deep that one is.

**7 What are your favorite plugins?**
Number one has to be **Pro-Q 3 by Fabfilter**. It's an obvious choice, a great EQ, and can get really detailed if you need to do some vintage dynamics or side-chaining work. I can't live without it.

My next favorite is also a **Fabfilter**, their **Pro-L2** limiter. I've used so many limiter plugins in my time and none of them really sounded as clean as the Pro-L2 – that is if you want it to sound clean.

Next up would probably be the **Universal Audio LA2A compressor**. It's my go-to compressor for much smoother compression and it sounds good enough to my ears.

> "If you are using more than two EQs on a kick drum sound, it's probably better to find another kick"

After that I'd say **iZotope's Ozone 9 Exciter**. It has seven saturation modes and four adjustable EQ bands with each band's own Dry/Wet mix control. What's not to like.

Finally I'll go with the **SSL FlexVerb**. It's a new one for me, but I find myself starting to throw it on more things, the room sounds really natural, and with the right adjustments you can really blend the reverb with the dry signal, which a lot of the reverb plugins can't really achieve.

**8 How do you tend to start a track?**
Since I'm a drummer, I usually start with the drums and the sound of the drums is the most important thing to me in a track. The sonic of the percussion can really define the backbone of a song. I almost never start with songwriting, which is not a good thing I think, because I'll find myself being happy with an eight-hour slow-roasted production, but then my ear would get stuck, having trouble imagining vocals on it. I'm trying to get better at this!

**9 Do you have any production tricks?**
Lately I've realised that you really want to do as few surgical moves as possible. I used to over-EQ a kick, or over-multicompress a vocal, but if doing those things doesn't have a consistent, stylising effect on your production, what you're doing is essentially breaking the source of your sound. So I think that if you have more than two EQs on your kick, it's probably better to find another kick.

Similarly, if you have more than two exciters on your vocal, change the microphone. You simply want different characteristics from your sound, so do that, and get another source that demands less surgical mixing. It's easy to feel satisfied or 'complete' when you've spent an hour on a snare, but that doesn't mean you're getting a better result than changing to a different snare.

**10 How do you know when a track is done?**
I've had the curse of not finishing songs for years, always completing the intro-verse-pre-hook and then that's it. The thing is I like to always listen back and mix while producing. It's therefore really easy to get satisfied when I have the first part of the song, because it is fundamentally the idea of the song already, but I would have the hardest time trying to come up with bridges or second verses. The way for me to solve this issue is to try not to listen back as much. You will find yourself looping a section for too long and get familiar with it; you want to have a pair of fresh ears.

Also, know when to stop; you don't have to come up with the final mix on day one, and it's okay to just have an arrangement and call it, mix

**Chace's top plugin picks, clockwise from top left: Fabfilter's Pro-Q 3; Pro-L2 Limiter; iZotope's Ozone 9 Limiter; SSL's FlexVerb**

Chace admits to being picky with the ergonomics side of things

it or as I like to call it, 'garden' it after you know the structure is complete.

**11 What's on your gear wishlist?**
I watched a video touring Òlafur Arnalds' studio. I have to say, I'm craving my own Korg PS-3100. I spend way too much on gear, but it's never enough. But I like having this problem – it keeps me motivated.

**12 What would you like to see developed in studio technology?**
We've got to engineer a better solution for where we put our synths! The keyboard stands that everyone uses take up too much room. The higher shelves block the panels of the lower shelves, and aren't stable. Then there's the fact that you only feel comfortable playing keys when the keys are at a certain height, so that subconsciously makes you use the synths closer to your chest.

**13 Which track do you wish you'd produced and why?**
I don't really think that way, even if it's a song that sounds like I could've produced it, and it's doing really good. The fact that it came from someone else is always more important. It's their act, their fan base, their career momentum, their PR, their platforms – it's just never just about the music.

**14 What's the best advice you've ever been given by anyone?**
Someone once told me that to understand music from a certain time, you should always look at the most popular genre at the moment as an antidote. Bebop music was the antidote to a certain thing, punk rock music was the antidote to a certain thing, dubstep is an antidote, trap music is an antidote, house music is an antidote, etc. Only when you find out what these music genres are antidotes to, will you see the bigger picture and understand the culture, and then reflect back on yourself.

**15 What else do you have planned for the future?**
I'm currently diving back into the studio and making new music. I've always been trying to balance the dance music side and the more indie, live music side of me, and I think my main audience haven't really seen the non-DJ side of me yet. Figuring out how to present that is gonna be a fun new chapter. em

Belated Suffocation *is out now on Fabled Records. His EP,* Destination, *on Barong Family*

## HEAR MORE

*Stranger* (with Yellow Claw)
**bit.ly/chc_stranger**

*Mariya*
**bit.ly/chc_mariya**

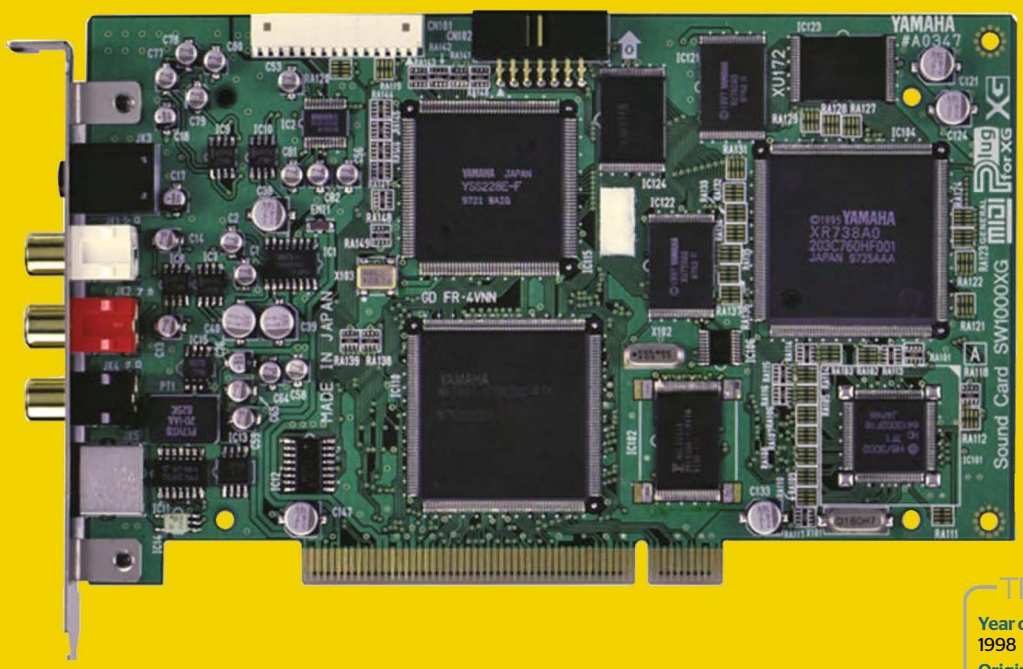
edm.fandom.com/wiki/Chace

wwww.instagram.com/chacesound

www.facebook.com/chacesound

# BLAST FROM THE PAST

Computer music production hit its adolescence in 1998, and Yamaha's high-end soundcard was a serious alternative to owning a studio full of hardware...




## Yamaha SW1000XG

TECH SPECS

**Year of manufacture**
1998

**Original sale value**
$699

**Current price**
$40-$100

**Number made**
Unknown

**This magazine has been guiding its readers through the murky mazes of music production for a very long time now. 25 years ago desktop production was a relatively new, exciting, and – most of all – confusing pursuit. Computers had generally been used in tandem with hardware MIDI or audio devices. The idea of 'native' software instruments was relatively new, and generally relegated to offline processes.**

Full compositions required studios of MIDI synths and samplers, and professional quality audio recording was primarily relegated to, well, professionals. The rest of us had to make do with substandard consumer interfaces to get sound in and out of our machines. That all changed in 1998 with the introduction of two PCI sound cards: the consumer-oriented Soundblaster Live! and Yamaha's SW1000XG.

There's no denying that the relatively inexpensive and wildly popular Soundblaster Live! was the interface that ushered in an entire generation of desktop producers, offering 16-bit, 48kHz converters and the ability to play back samples. It even offered a couple of simple effects. However, those looking for a more professional solution would find one in the no-compromise SW1000XG. Released alongside Yamaha's impressive DSP Factory (essentially, their entire high-end O2R mixer on a card), the SW1000XG was the synth lover's alternative, offering up a fully-loaded XG ("Extended General MIDI") synthesis engine, a twelve-channel mixer, a full five effects processors (with 70 effects from which to choose!) and the ability to fold its own master output back into the mixer without leaving the digital realm. None of this power was drawn from the host computer's CPU.

It was the powerful built-in XG synth that gave Yamaha's card the edge (no pun intended). A fully-loaded ROMpler with 1200 presets and 46 drum kits stuffed into its 20MB ROM, it provided more than enough fodder for entire compositions. The internal synth engine could be edited with optional software. If that weren't enough, there was a slot for adding one of Yamaha's slick PLG daughterboards. These cards came in a variety of flavors, including a full six-op, DX-style FM synth, a VL card that drew upon Yamaha's acoustic modeling tech, an AN1X-style virtual analog synth, and even a vocoder. What's more, they provided their own DSP, so taxed neither the host computer's CPU nor the SW1000XG's.

> Soundblaster Live! ushered in an entire generation of desktop producers

While the Soundblaster series evolved from the needs of gamers, the SW1000XG was designed from the ground up for musicians. This is an important distinction. While there had been interfaces aimed at pro recording, the Yamaha was clearly intended for the process of actually making music. Its days were clearly numbered, though. Within a year of its release, Steinberg would update its VST plugin format to allow the creation and use of virtual instruments. Soon, users would have access to all manner of high-quality synths running natively on their computers. SW1000XG owners could, for a while, outdo them in polyphony and sound quality, but eventually even die-hard XG fans would be aged out as their obsolete operating systems were abandoned by Yamaha's developers. em

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